Intl Code

AMERICAN STANDARDS ASSOCIATION
INCORPORATED
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ASA

9/17

SECTIONAL COMMITTEE CORRESPONDENCE

1965 August 26

ADDRESS REPLY TO
Mr. V. E. Henriques
BEMA/DPG
235 East 42nd Street
New York, N. Y. 10017

MEMORANDUM TO: Subcommittee X3.2 and
Task Group X3.2.5

The attached document from the Code Standardization Committee, Information Processing Society of Japan is for your information and files.

Vico E Henriques
Vico E. Henriques
Secretary, X3

VEH:moc
Attachment

NMAH 310/5

August 17, 1964

Investigation of Actual Circumstances on the International Code Standardization and Proposed New Code in Japan-1963 Fiscal-year

Code Standardization Committee,
Information Processing Society of Japan

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Investigation of Actual Circumstances on the International Code Standardization and Proposed New Codes in Japan

I. The Background of the Code Standardization Committee-IPS Japan

(1) International Code Standardization Activities

Many people expect that the information interchange will become more significant as the application of electronic computers becomes more popularized. Reflecting this, discussions on international standards are now being accelerated in the various fields of information interchange.

Especially, the remarkable movements to unify the code, called the language for information interchange, on the world-wide scale have been made in various contries for ISO (International Organization for Standardization) as the place of standrdization on the international level.

It is believed that code unification may be called the first step of standardization in the data processing field and that the various standardizations in the field will be discussed, beginning with this starting point. Therefore, the code standardization is regarded in many contries as one of the most important problems and is being examined with great care and eagerness.

Especially, BEMA in U.S.A. and ECMA (European Computer Manufacturer Association) in Europe have been making great contribution to ISO with their very active Technical Committees.

ISO has been working on standard codes since 1960, has proposed the standard 6 and 7 bit codes and is now requesting review and comments in the various fields for the adoption of them as international standard codes. Due to the fact that the IBM code is widely used at present, it is said that some of compromises will probably take place in the future. However, IBM Corporation has attached great importance to the movements around ASA (American Standard Association) and AT&T, and has been gradually shifting to a policy to adopt ISO codes as the code system of its future products. Thus, the tendency to unify the ISO codes as the international codes has been enhanced. Responding to such movements in U.S.A., many countries in Europe have been showing a positive preference for ISO. However, the 6 bit code system is supported in Europe as opposed to the trend in U.S.A. to be adopted 7 bit code system.

Under these circumstances, ISO proposed the 6 bit and the 7 bit codes as the standard.

However, there is no doubt that code sets required for information interchange will be further increased in their number of bit with the advancement of civilization. Recently, it is even opined that the 7 bit code is already coming short of requirements and the 8 bit code should be adopted as the standard. Such tendency is particularly notable in such countries as our own where the proper characters have to be employed.

In such cases, it is naturally supposed that the 8 bit code will be discussed upon the decision of ISO code in the near future.

(2) Present standards situation in our country and the Establishment of the Code Standardization Committee.

Under the circumstances previously mentioned, the unification of code in our country was also brought into question and various discussion have been made, but never been done from the international standpoint.

There are many unique circumstances in our country which will not be found in other countries, and many questions remain even with the establishment of standard codes. Hence, some strong demands were pushed by many computer manufactures and users in our country so that the codes to be discussed and standardized on the international level might conform with actual circumstances in our country. Especially, Nippon Telegraph and Telephone Public Corporation, beginning the establishment of a new data communication system, was in urgent need of code standardization to adopt promising codes.

The government is taking the situation seriously and recognizing the need of establishing standard codes from the international standpoint and consigned the research for this purpose the the Information Processing Society of Japan (IPS of Japan). And the Code Standardization Committee was established in July, 1963 within the IPS of Japan. The Committee, which was necessitated to debate the problems with a broad range of vision, consisted of men of learning and experience, computer manufacturers and users in all fields.

Members of the Committee are as Follows:

Chairman:	Takuo Sakaki	Chief Engineer of Nippon Telegraph and Telephone Public Corporation
Committee Members:		
Users:	Kazuo Yamaguchi	Director of Administrative Management, Bureau of Administrative Management Agency
	Toyohei Rai	Duputy Chief Engineer of Japan National Railways
	Toshio Minegishi	Executive Director of Dai-Ichi Bank Ltd.
	Shinsuke Shiokawa	Tokyo Securities Computing Center
	Tsutomu Endo	Chief of Computing Section, Planning Office, Tokyo Electric Power, Inc.
	Kohei Yamamura	Director of General Affairs Division, Fuji Iron & Steel Co., Ltd.

Manufacturers:	Tomotsu Saito	Representative Director of Japan Electrinic Industry Development Association
	Shohei Takada	Head of Kanagawa Plant, Hitachi Ltd.
	Yujiro Idegawa	Chief Engineer of Nippon Electronic Company
	Daisuke Kobayashi	Vice-Director of Electronic Computer Division of Fujitsu Ltd.
	Rentaro Sasaki	Executive Director of Oki Electric Company
	Yuichi Makino	Manager of Communication Division Tokyo Shibaura Electric Co., Ltd.
	Akira Kaiho	Manager of Standards, IBM Japan
Man of Learning and Experience:		
	Masaru Hayashi	Director of First Research Division, National Language Research Institute
	Tatsushi Motooka	Assistand Professor of Tokyo University
	Zenich Kiyasu	Professor of Tohoku University
	Takeshi Kiyono	Professor of Kyoto University
	Tatsuya Shinbori	Vice-Director of Electrical Communications Laboratory, NTTPC
	Hiroshi Wada	Director of Electro-Techinical Laboratory, MITI
	Noburo Minamizawa	Manager of Research Division, Onoda Cement Co., Ltd.
	Tadashi Yoshioka	Manager of Electronic Industry Section, MITI
	Yutaka Yagawa	Manager of Electric Standards Section, Agency of Industrial Science and Technology, MITI
Secretariat:		
	Hisayuki Fujimoto	Information Processing Society

(3) Purpose and Policy of Activity

The purpose of this committee was to perform study and investigation in order to establish the standard code, originating from the request of the Industrial Science and Technology Agency. Therefore, it was naturally supposed that the question of confirmable code (in conformance with JIS) would be discussed by this committee. It was necessary to discuss a code system which was international, sufficiently practical, and conformable with actual circumstances.

There was several sorts of codes used for information interchange (depending upon the media of interchange; i.e paper tape code, magnetic tape code, card code etc.) However, it was scheduled in the 1963 fiscal year that the paper tape code regarded as the most basic would be discussed and decided upon by the Committee.

Since the aim of standardizing the code was in information interchange, international movement of other countries were naturally taken seriously and interested in Japan a great deal. Until now, Japan has an observers-membership to the ISO TC97/SC2. Due to this, our country has not been actively partishipating in the committee. Not only dit she fail to reflect her views in ISO, but many times, missed to gain complete sights of international movements. However, if we deliberate about the importance of international unification of code and compare the particular circumstances in our country with those of other nations, (countries in Southwest Asia etc.) where the characters other than Alphabet are used, it is a significant thing for our country to join ISO actively and to make an effort not only for ourselves but for the foreign countries. It is clear that the way of thinking on the standard code in our country has a great influence upon other countries.

For that reason, the Committee decided on a policy to conduct the following activities:

(i) To understand the circumstances in the world thoroughly and to participate in ISO TC97/SC2 actively in order to reflect the views of our country in ISO (to make an effort to be changed to P member).

(ii) To respect for 7 bit code of ISO.

(iii) To study to adapt the KATAKANA characters of our country proper for the ISO codes.

(iv) To debate the associated affairs, for instance, the magnetic tape code.

II. A step of the Code Standardization Committee-IPS Japan

Basing upon the policies described above, Committee conducted the following concrete activities:

On the First Meeting, the Code Standrdization Committee was organized and the purpose of its activity was authorized. The movements of code standardization in foreign countries and in our country were reviewed. Actually, various codes are now being used. However there is a general trend for these codes to be unified to the 6 and 7 bit codes proposed by ISO in the future.

In our country, three study groups had been moving actively, with different aims, and all of them contemplated to adapt the KATAKANA characters for the 7 bit code of ISO.

On the 2nd Committee Meeting, the problems on code standardization were discussed. Adapting the KATAKANA characters for the ISO codes, the set of KATAKANA characters, collating sequence, code assignment, key board arrangement and relation with other codes became the issues and how to contemplate these items became the subjects for research.

The opinions of the Committee against ISO codes were adjusted. Some amendments to improve ISO 6 bit code so as to be used for the subset of 7 bit code were advanced. This proposition was handed to the chairman of the ISO TC 97/SC2, character set & Coding.

On the 3rd Committee Meeting, a change in the membership to the P Member in ISO TC97/SC2 was confirmed.
The result of investigation about the code standardization in Europe was reported. In Europe, the 6 bit code system is supported by many countries and there is a tendency to employ the 6 bit code basically, but the way of thinking for code systems is unified through ECMA.

Finally, the policy plan for Committee activities was rechecked in the background of these new circumstances in Europe.

On the 1st Special Committee Meeting, the opinion of Japan against ISO draft codes was adjusted and sumbitted to ISO. Judging from the circumstances around the code standardization in Europe, since it was perceived that the opinion to improve the ISO 6 bit code to be used for the subset of 7 bit code would not be accepted, the opinion adjusted in the preceding meeting was amended again.

On the 4th Committee Meeting, the activities on the ISO TC97/SC2 Meeting held in Europe and the circumstances around the standardization in U.S.A. were reported. It was revealed that ISO had decided already to adopt the 6 and 7 bit codes and only several questions about details left.

In U.S.A., the adoption of ISO 7 bit code was decided completely and AT&T has already enterned into service with this code system.

IBM Corp. and others are likely to decide to take up the ISO codes and the standard.

Then, the discussion was shifted to the code standardization of KATAKANA characters. At first the points to be discussed were affirmed. Opinion was advanced that 8 bit system should be used as a standard in such countries as Japan where a large number of National Characters are employed and it was recognized that some realm for National Characters should be secured on the international scale. In addition, the general discussion on the code of KATAKANA characters was taken. A keen interest was drawn to the opinion that the code systems should be separated into the business code mainly consisting of KATAKANA characters and the scientific code consisting of ISO 7 bit code for which alphabet is mainly used.

On the 5th Committee Meeting; the discussion was made which one, 7 bit 8 bit should be established as the bit number of standard code. At first, it was reported that the super set of 8 bit had already been considered as the standard by the subcommittee of ASA, and proposition was made to expand the bit to the 8 bit system and the allocation of KATAKANA characters. Against this proposition, the report was submitted by Nippon Telegraph and Telephone Public Corporation concerning the probable problems which will be aroused in the case of the employment of 8 bit system. It was found that there was no way other than to use 7 bit code for the time being, so far as the present telegraph system would be used in Nippon Telegraph and Telephone Public Corporation.

As a result of discussion the proposition of the 8 bit system, it was recognized that a further study have to be given to typing mechanism, paper tape width, key board arrangement etc., and should be thoroughly discussed from a broader standpoint.

On the 1st Working Group Committee Meeting; Member of the Committee were asked to express their respective opinion of the standard code. Generally speaking, 8 bit code was supported by the majority of users and 7 bit code was by makers and Nippon Telegraph and Telephone Public Corporation.

The results reveal that the 8 bit system is profitable for users because the larger code set is convenient and an extension of bit is expected in the future, and makers are forced to use the 7 bit system for the time being for the positibility of the realization of related machinery and economization thereof.

As the result of various discussions about these questions, a proposition was made to adopt the standard code of 8 bit system which contains the subset of ISO 7 bit code as the philosophy and to employ the 7 bit system for paper tape code. In addition, a suggestion was made to secure the realm, on the international scale, for which the National Characters would be allocated.

On the 6th Committee Meeting; the further discussion was made about the number of bit of standard code. The Government authorities general were separated into pros and cons in their opinions against the 8 bit system. After all, the Committee recognized the existance of the gap between ideal and reality, and agreed to have another opportunity to discuss this matter in the light of opinion expressed at a meeting of the ISO Committee in May of this year.

Then, the discussion was shifted to the selection of the KATAKANA characters, and several opinions were expressed about the set of KATAKANA characters. As the result of discussion, 55 letters and 9 sorts of symbols were selected as the KATAKANA character group.

On the 2nd Working Group Committee Meeting; discussion was made about the KATAKANA collating sequence. As for the KATAKANA collating sequence, discussion began with the problem how to deal with the group of KATAKANA characters which was considered suitable viewing from the instances adopted in the current national language dictionary and from the key-board arrangement.

And it was recognized that the current KATAKANA collating sequence was complicated and not simple in its rule, and that the standard code could not be applied to it in that condition. Hence, a new KATAKANA collating sequence had to be discussed.

Finally, Nippon Telegraph and Telephone Public Corporation made a suggestion on the bit number of standard code for the adoptation of the 8 bit system for JIS, and the 7 bit for the transmission system of paper tape. Because importance was to be placed on international movements in order to make a decision on this question, it was decided that the final decision would be made after the ISO Meeting in May.

On the 7th Committee Meeting; at first, the collating sequence for the prolonged sound symbol (cho-on) and the accented sound symbols of KATAKANA characters were decided judging from the actual examples. An investigation by JEIDA (Japan Electronic Industry Development Association) revealed that the views of the KATAKANA character were varied with corporations. After discussed about the collating sequence of KATAKANA, the feasibility of the actual allocation of KATAKANA character groups was debated taking account of ISO 7 bit code and the key-board arrangement. Finally, the discussion was made about views of Japan to be submitted to the next ISO Meeting, and it was decided to set forth at ISO that the realm assigned for National Characters should be determined according to both cases of 7 bit code and 8 bit code.

On the 8th Committee Meeting; the KATAKANA collating sequence for the small letters and symbols was debated. As for the small letters, the appropriateness of two ideas, one is to place just in front of the capital letters and another is to arrange together in a group, was discussed, but it was temporally decided to apply to the former. Then, the discussion was proceeded to the method of extension from 7 bit to 8 bit and the practice of allocation of KATAKANA characters.

There were several methods of extension discussed, and among then, two ideas confronted in reference to the location of group of KATAKANA characters to be allotted. However, the two ideas were temporally authorized and the final decision was scheduled to be made after the ISO Meeting in May.

The proposition of Japan to be submitted to the ISO was approved, thus, the Code Standardization Committee Meetings in the 1963 fiscal year ended.

III. Proposition of New Code and Questions in Future

KATAKANA characters, the national characters of our country, consist of 48 through 85 letters and there are some great questions on the methods to adapt them to the ISO codes.

Therefore, whether the standard code of 7 bit system should be established so as to be able to switch between ISO Code and KATAKANA Code by means of SO (Shift-out) and SI (Shift-in), or 8 bit system without SO and SI should be established, is now coming into question.

If the 7 bit system is adopted, the employment of 8 bit in the future is apprehensive, and if the 8 bit system is taken up, various questions will be aroused in the aspect of service-ability of code. In addition, as for the

KATAKANA characters itself, some questions remained about the disposition of small letter group. To settle these questions an investigation must be carried out in the wide range of vision to find now the community is influenced by the new standard code. To establish the promising and practical standard code, it is essential to obtain the sufficient data by experiments or trial productions or to discuss the advantages and disadvantages after the full understanding is obtained of the circumstances in the world.

For these reasons, the committee has been discussing the code system which is applicable even if either of 7 bit system or 8 bit system is adopted in the end, and decided to give the final decision after observing the circumstances in the ISO Meeting to be held in May, 1964.

Therefore, the proposed new code, which was discussed on the Committee Meetings and determined temporarily, is the combination of both a ISO 7 bit code as shown in Table 1 and the KATAKANA character code set as shown in Table 2.

If the standard code is established as 7 bit system, these codes will be combined by means of SO and SI. And if unified to the 8 bit system, the new codes as shown in Table 3 or Table 4 will be adopted. However, either of them will be taken up after the method of extending from the current ISO 7 bit code to the 8 bit code, in which the National Characters were incorporated, is determined. Besides, the proposed new code may be changed within the scope of amendments decided by ISO because the policy is to pay respect to the ISO 7 bit codes.

In such a manner, the new code has been proposed. The future question left to the committee are as follows:

(1) To establish the bit number for standard code and to determine the collating sequence for the small KATAKANA letters and the methods of extension toward the 8 bit system.

(2) To contemplate the realization of equipments in accordance with the new proposed standard code.

(3) To examine the relationship between magnetic tape code, card code and paper tape code.

It is believed that some fairly clear clues of solution about a part of these questions will be obtained depending upon the circumstances on the next ISO Meeting.

				7	0	0	0	0	1	1	1	1
				6	0	0	1	1	0	0	1	1
				5	0	1	0	1	0	1	0	1
4	3	2	1									
0	0	0	0		Null	DC_0	Space	0	@	P		p
0	0	0	1		SOM	DC_1	!	1	A	Q	a	q
0	0	1	0		EOA	DC_2	'	2	B	R	b	r
0	0	1	1		EOM	DC_3	÷	3	C	S	c	s
0	1	0	0		EOT	DC_4	CS	4	D	T	d	t
0	1	0	1		WRU	Error	%	5	E	U	e	u
0	1	1	0		RU	Snyc	&	6	F	V	f	v
0	1	1	1		Bell	LEM	' (Apost)	7	G	W	g	w
1	0	0	0		FE_0	IS_0	)	8	H	X	h	x
1	0	0	1		HT	IS_1	(	9	I	Y	i	y
1	0	1	0		LF	IS_2	. *	:	J	Z	j	z
1	0	1	1		VT	IS_3	+	;	K	[	k	
1	1	0	0		FF	IS_4	, (Comma)	<	L	\	l	Ack
1	1	0	1		CR	IS_5	−	=	M	]	m	Alt
1	1	1	0		SO	IS_6	.	>	N	↑	n	Escape
1	1	1	1		SI	IS_7	/	?	O	←	•	Delete

Table 1. ISO 7 Bit Code

			7	0	0	0	0	1	1	1	1
			6	0	0	1	1	0	0	1	1
			5	0	1	0	1	0	1	0	1
4	3	2	1								
0	0	0	0	Control	Reserved for	Space	オ	ト	ャ		
0	0	0	1			•	カ	ナ	ヤ		Reserved for
0	0	1	0			「	キ	ニ	ュ	Additional National Graphics	
0	0	1	1			」	ク	ヌ	ユ		
0	1	0	0			,	ケ	ネ	ョ		
0	1	0	1			•	コ	ノ	ヨ		
0	1	1	0			ー	サ	ヘ	ラ		
0	1	1	1			ァ	シ	ヒ	リ		
1	0	0	0			ア	ス	フ	ル		
1	0	0	1			ィ	セ	ヘ	レ		
1	0	1	0			イ	ソ	ホ	ロ		
1	0	1	1			ゥ	タ	マ	ワ		
1	1	0	0			ウ	チ	ミ	ヲ		Reserved for Control
1	1	0	1			ェ	ッ	ム	ン		
1	1	1	0			エ	ツ	メ	゛		
1	1	1	1			ォ	テ	モ	゜		

Table 2. KANA Characters 7 Bit Code

			8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
			7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
			6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
			5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
4	3	2	1																
0	0	0	0	Null	DC$_0$	Space	0	@	P		p		Reserved for	Space	オ	ト	ャ		↑ Reserved for
0	0	0	1	SOM	DC$_1$	!	1	A	Q	a	q			・	カ	ナ	ヤ		
0	0	1	0	EOA	DC$_2$	"	2	B	R	b	r			「	キ	ニ	ュ	Additional National Graphics	
0	0	1	1	EOM	DC$_3$	≠	3	C	S	c	s			」	ク	ヌ	ユ		
0	1	0	0	EOT	DC$_4$	CS	4	D	T	d	t			、	ケ	ネ	ョ		
0	1	0	1	WRU	Error	%	5	E	U	e	u	Additional Control		・	コ	ノ	ヨ		
0	1	1	0	RU	Sync	&	6	F	V	f	v			ー	サ	ハ	ラ		
0	1	1	1	Bell	LEM	'(Apost)	7	G	W	g	w			ァ	シ	ヒ	リ		
1	0	0	0	FE$_0$	IS$_0$	(	8	H	X	h	x			ア	ス	フ	ル		
1	0	0	1	HT	IS$_1$	)	9	I	Y	i	y			ィ	セ	ヘ	レ		
1	0	1	0	LF	IS$_2$	*	:	J	Z	j	z			イ	ソ	ホ	ロ		
1	0	1	1	VT	IS$_3$	+	;	K	[	k				ゥ	タ	マ	ワ		
1	1	0	0	FF	IS$_4$	, (Comma)	<	L	\	l	Ack			ウ	チ	ミ	ヲ		← Reserved for Control →
1	1	0	1	CR	IS$_5$	−	=	M	]	m	Alt			ェ	ッ	ム	ン		
1	1	1	0	SO	IS$_6$	.	>	N	↑	n	Escape			エ	ツ	メ	゛		
1	1	1	1	SI	IS$_7$	/	?	O	←	o	Delete			ォ	テ	モ	゜		

Table 4. 8 Bit Code (B)

ECMA/TC1/65/61

E C M A

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

Contribution on 7 bit Code Modification, by Mr. Durand

Sept. 10, 1965

IBM proposed some alterations to the symbol allocation in view of :

a) introducing Programming Languages symbols there are :

| (vertical bar) for logical "and"
¬ (overlining) for logical "not"

b) placing the @ (at sign) within the 64 graphics subset of the code represented by the four central columns of the table.

No doubt case a) is of general interest but we should try to avoid modifying the code - it is late to do so - in solving it.

The case b) reflects a fairly spread usage of the @ sign within some countries and organizations and is not seriously defendable. But this symbol is within the list of the "national reservation" and some switching within this list can hardly be considered as in contradiction with the standard. However, we believe that only time and experience will show if some common, or compatible, usages are found for the national positions. In the meantime let us be very careful and avoid their usage in international exchanges, in particular for programming languages.

In conclusion our recommendation would be :

For case a)

1) Allow the use of ! (exclamation mark) for | (vertical bar)
2) Recommend the use of ^ (circumflex accent, tilde) for ‾ overlining.

We believe that both ! and ^ are not used or can be avoided in programming and that the above variations in the meaning are quite acceptable.

For case b)

Not to change the present code for the reasons stated above.
Should a given company replace the "second currency sign" by the "at sign", for example, may not be considered as an international offense! But national usage needing extra letters are to be observed.

NMAH 310/5

NORTH AMERICAN AVIATION, INC.
GENERAL OFFICES • 1700 EAST IMPERIAL HIGHWAY • EL SEGUNDO, CALIF. 90246

February 24, 1966

TO: SHARE Standards Project - SHARE XXVI Meeting, San Diego

FROM: Ben R. Faden (NG), Manager SHARE Administration Division

SUBJECT: Standards for Internal Character - Encoding in Binary Computers (ICEBC)

I recommend that the SHARE Standards Project communicate the following to the American Standards Association:

> "SHARE believes that an American Standard should be established for binary character codes used for internal character encoding in binary computers. SHARE volunteers to serve actively on a committee to establish such standards. SHARE believes that all manufacturers of binary computers and all user organizations for these machines should and would be happy to serve on such a committee."

I regard it as of the highest importance that SHARE act immediately to propose this establishment of a simple, direct, and explicit approach to standards for internal character-encoding for binary computers.

It would be a national calamity, truly national and truly calamitous, if ASCII is established as a standard for this purpose solely by default of the responsible parties in respect of setting up procedures to establish standards specifically and explicitly for this purpose.

SHARE represents the biggest source of knowledge as to the needs of binary computer users, for internal character codes and standards therefor. Inaction or temporizing on SHARE's part is irresponsibility precisely in the area where our responsibilities are gravest. Time is the essence. Accordingly, I respectfully urge that this resolution be adopted by the Standards Project at its March 2, 1966 meeting.

Very truly yours,

Ben Faden

Ben R. Faden (NG)
Manager, SHARE Administration Division

North American Aviation, Inc.
Department 892 - Mail Stop E13

BRF:lz
cc: J. Tupac (RS), for SSD
SHARE Executive Board

rMcAH/30/5

X3.2/267
14 Sept 1965

AMERICAN STANDARDS ASSOCIATION
INCORPORATED
10 East 40th Street New York, N. Y. 10016
ASA

SECTIONAL COMMITTEE CORRESPONDENCE

September 16, 1965

ADDRESS REPLY TO

TO: Subcommittee X3.2

FROM: Task Group X3.2.4

The attached document represents X3.2.4's reply to the JUG conditional ballot received in connection with the balloting on proposed Revised ASCII. It is suggested that this document be approved and passed on to X3 Sectional Committee.

E. F. Vidro

E. F. Vidro
Acting Task Group Chairman

EFV:moc
Attachment

C81 67/3/9

TO: X3 Sectional Committee

FROM: X3.2 Subcommittee

SUBJECT: Reply to JUG Conditional Ballot

This is in reply to your letter ballot on the proposed Revised ASCII. Task Group X3.2.4 has reviewed your proposed modifications, and finds it is impractical to incorporate them at this time. In their review, the Task Group reaffirmed the technical reasons previously expressed in response to the initial presentation of many of your points in Mr. Andrus' letter of June 9, 1965.

The relocation of "commercial at," "vertical rule," and "overline" into the central four columns of the code is deemed impractical for the following reason:

> Such relocation would of necessity displace from the dense central graphic subset either diacritical marks or commonly used commercial correspondence punctuation. When priority of one symbol over another for a preferred location is under consideration, it is usually felt desirable to grant that priority to a "general use" character over a "programming symbol." This results from the fact that "general use" symbols often have extensive precedent for their use, which is especially significant to laymen. Programming symbols, on the other hand, generally have more recently established arbitrary meanings of major concern only to specialists in programming.
>
> In addition, it should be remembered that the vast bulk of data to be recorded or communicated will not be programs, but perhaps more typically text or data itself. Thus, convenient access by a wide range of input-output devices is most needed for the "general usage symbols."
>
> These considerations are applicable to the diacritical marks by virtue of the importance of international acceptance of the code coupled with the European view that the diacritical marks are essential to the general representation of language.

The relocation of the character Delete is manifestly impossible, as the entire purpose of the character is to consist entirely of "ones." This character should not be confused with a graphic or control character used to signify that some information already recorded or transmitted is to be disregarded.

We regret that it is not possible within a single coded character set to optimally accommodate the desires of all fields of application.

Standards

S. GORN, Editor; E. LOHSE, Asst. Editor, Information Interchang
R. V. SMITH, Asst. Editor, Programming Langu
J. F. TRAUB, Asst. Editor, Glossary & Terminolo

Editor's Note

The revised ASCII was published in the April 1965 issue of the *Communications of the ACM* and is now in the final ballot stage in X3. Mr. Crosby has an interesting suggestion, below, on the presentation of the table of the code which might expedite its usage. In addition, it provides an octal tabulation in the form commonly used in tables of logarithms which may be easier for certain users to deal with. We present this information, not so much to interrupt the standardization process at this time, but rather to get reaction through usage to compare with the method contained in the standards proposal. In the course of time, there undoubtedly will be other revisions to the ASCII standard. It is hoped that the usage of the table and the octal notation will guide the appropriate standards activities in preparing the updated proposals.—E. L.

Note on an ASCII-Octal Code Table

William S. Crosby
Integrated Bibliography Pilot Study
University of Colorado
Boulder, Colorado

The tabular display of the "Proposed Revised American Standard Code for Information Interchange" [*Comm. ACM 8* (April 1965), 207–214] seems open to improvement in one respect: it can be recast in a form in which the bit pattern of the characters and their octal numerical equivalents are more clearly related.

Figure 1 attached, which should be compared with the chart given on page 207 of the April 1965 issue, shows the effect of such a reformatting. The seven-bit patterns have been segmented into fields of four higher-order and three lower-order bits, rather than into fields of three and four respectively. This new segmentation virtually dictates a reassignment of the contents of a column of the original chart so that they occupy two consecutive rows of the reformed version. Now, however, it becomes practical to label the new rows and columns with the octal condensation of their bit patterns; the new chart then reads like a table of common logarithms.

The pair of solid horizontal lines within the character area enclose an all-graphic 64-character subset; the pair of jogged dashed lines enclose a (mainly numeric) 16-character subset. Both are being discussed as possible standard subsets.

For help in the development of this chart, of which an earlier version was discussed at the June 29–30 meeting of X3.2.4, I am indebted to the suggestions of Mess Edward A. De Avila and John L. Little.

b7 b6 b5 b4 ↓ / b3 b2 b1 →		000	001	010	011	100	101	110	111
	N8	0	1	2	3	4	5	6	7
0 0 0 0	00	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL
0 0 0 1	01	BS	HT	LF	VT	FF	CR	SO	SI
0 0 1 0	02	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB
0 0 1 1	03	CAN	EM	SS	ESC	FS	GS	RS	US
0 1 0 0	04	SP	!	"	#	$	%	&	'
0 1 0 1	05	(	)	*	+	,	—	.	/
0 1 1 0	06	0	1	2	3	4	5	6	7
0 1 1 1	07	8	9	:	;	<	=	>	?
1 0 0 0	10	`	A	B	C	D	E	F	G
1 0 0 1	11	H	I	J	K	L	M	N	O
1 0 1 0	12	P	Q	R	S	T	U	V	W
1 0 1 1	13	X	Y	Z	[	~	]	^	[illegible]
1 1 0 0	14	@	a	b	c	d	e	f	g
1 1 0 1	15	h	i	j	k	l	m	n	o
1 1 1 0	16	p	q	r	s	t	u	v	w
1 1 1 1	17	x	y	z	{	¬	}	|	DEL

Fig. 1

The policy of the Communications of the ACM now provides for any interested company or person to place an advan order for offprints of items in the Standards department concerning proposed American Standards. Such items to appea this department will be announced one month in advance of publication. This courtesy is being offered to ensure the wide possible dissemination and discussion prior to the finalizing of the standard under consideration.

ASA American Standards Association Incorporated
10 East 40th Street, New York, N.Y. 10016

This copy is sent for the files of voting members and for the information of alternate members.

PDC

pRASCII
X3.2

CIP LB 17
October 15, 1965

LETTER BALLOT
of the
INFORMATION PROCESSING SYSTEMS STANDARDS BOARD
on
Recommendation on Approval
of
Proposed Revision of American Standard
Code for Information Interchange, X3.4-1963

FOR INFORMATION

[illegible]

This letter ballot is taken by authority of the Chairman of the Information Processing Systems Standards Board, Dr. S. N. Alexander.

On October 4, 1965 (MC 4901), the Business Equipment Manufacturers Association, sponsor for the project on Computers and Information Processing, X3, submitted to the ASA for approval as American Standard the proposed revision of the American Standard Code for Information Interchange, X3.4-1963.

A detailed account of the voting in the sectional committee and other pertinent information concerning this submittal are given in MC 4901 and CIP 43.

The attention of the IPSSB is directed to the fact that the personnel of the X3 Committee was last approved in a meeting of the Board on August 27, 1965.

Accordingly, you are asked to vote on the following question:

	I VOTE
Shall the Information Processing Systems Standards Board recommend that the proposed revision of the American Standard Code for Information Interchange, X3.4-1963, be approved as American Standard?	YES ______ NO ______

Signature ______________________________

JK
Encl. MC 4901
CIP 43

cc: Alternates
Organizations
Others Concerned

VOTING INFORMATION

American Standards are developed by the voluntary participation of all parties at interest with the intention and expectation that the standards will be suitable for wide application. Since their use is likewise voluntary, an affirmative vote does not commit an organization or a group represented on the committee to the use of the American Standard under consideration.

ASA American Standards Association Incorporated
10 East 40th Street, New York, N.Y. 10016

CIP 43
October 15, 1965

On Proposed Revision of X3.4-1963,
American Standard Code for Information Interchange

Mr. R.E. Utman, principal representative for the Joint Users Group on Sectional Committee X3, cast a conditional affirmative vote on the Proposed Revision of American Standard X3.4-1963, with the following note (taken from his executed letter ballot dated 8-5-65):

> This vote of affirmative is conditioned on a resolution of the question of programming languages graphic subset, raised in the Andrus' letter of June 9, 1965, in which the @ symbol is indeed available within such subset along with the capital or upper-case alphabet and the DELETE code as well as special symbols as now contained in sticks 4 and 5 of the pRASCII. Therefore, there is a time factor associated with this YES vote, as well as the binary condition that if the above condition is not realized in X3 within the ballot period the vote automatically becomes NO. The programming users want these symbols in the "standard" programming language graphic subset of RASCII.

On September 20, 1965, Mr. L.L. Griffin, Chairman of X3.2, Codes and Input-Output, addressed a memorandum to the Chairman of X3 on the subject of -- X3.2 Response to X3 JUG Member's Comments on Proposed Revised ASCII. This reads as follows:

> The attached document is the X3.2 response to the comments accompanying the X3 Joint Users Group member's ballot on the proposed Revised ASCII.
>
> The X3.2 committee approved this response on 16 September 1965.
>
> Attachment: Memo for X3 Sectional Committee, from X3.2 Subcommittee, on Response to JUG Conditional Ballot on p.Revised ASCII.
>
> This is in response to the comments accompanying the conditional ballot of the X3 representative (Mr. Utman) of the Joint Users Group (JUG) on the proposed Revised ASCII. The modifications proposed have been reviewed by Task Group X3.2.4 (Code Development). Their conclusions, which were

approved by X3.2, are that it is impractical to incorporate them at this time. The results of this review was a reaffirmation of the technical reasons previously expressed in response to Mr. Andrus' letter of June 9, 1965, which was the initial presentation of many of the points in Mr. Utman's comment.

The relocation of "commercial at," "vertical rule," and "overline" into the central four columns of the code is deemed impractical for the following reasons:

"Such relocation would of necessity displace from the dense central graphic subset either diacritical marks or commonly used commercial correspondence punctuation. When priority of one symbol over another for a preferred location is under consideration, it is usually felt desirable to grant that priority to a "general use" character over a "programming symbol." This results from the fact that "general use" symbols often have extensive precedent for their use, which is especially significant to laymen. Programming symbols, on the other hand, generally have more recently established arbitrary meanings of major concern only to specialists in programming.

In addition, it should be remembered that the vast bulk of data to be recorded or communicated will not be programs, but perhaps more typically text or data itself. Thus, convenient access by a wide range of input-output devices is most needed for the "general usage symbols."

These considerations are applicable to the diacritical marks by virtue of the importance of international acceptance of the code coupled with the European view that the diacritical marks are essential to the general representation of language."

The relocation of the character Delete is manifestly impossible, as the entire purpose of the character is to consist entirely of "ones". This character should not be confused with a graphic or control character used to signify that some information already recorded or transmitted is to be disregarded.

We regret that it is not possible within a single coded character set to optimally accommodate the desires of all fields of application.

American Standards Assoc[illegible]on Incorporated
10 East 40th Street, New York, N.Y. 10016

COPY

File
X3.2

October 8, 1965

Mr. C. A. Phillips, Director
Data Processing Group
Business Equipment Manufacturers Association
235 East 42nd Street
New York, N.Y. 10017

Dear Charlie:

Proposed Revision of American Standard
Code for Information Interchange, X3.4-1963

This will acknowledge and thank you for your letter of October 4, 1965 submitting to ASA for approval as American Standard the proposed revision of American Standard X3.4-1963.

The Information Processing Systems Standards Board is being asked to take action on this submittal, which is being circulated as MC 4901 to the Standards Council, the IPSSB, and officers of other standards boards as well.

You will hear from us as soon as final action has been taken.

Very truly yours,

R. E. Gay

R. E. Gay
Managing Director

JK
cc: Officers of X3

ASA *American Standards Association Incorporated*
10 East 40th Street, New York, N.Y. 10016

MC 4901
October 8, 1965

-COPY-

AMERICAN STANDARDS ASSOCIATION
INCORPORATED
10 East 40th Street New York, N. Y. 10016
ASA

SECTIONAL COMMITTEE CORRESPONDENCE

October 4, 1965

ADDRESS REPLY TO
C. A. Phillips
BEMA/DPG
235 East 42nd Street
New York, New York 10017

Mr. Roger Gay
Managing Director
American Standards Association
10 East 40th Street
New York, New York 10016

Dear Mr. Gay:

This is to submit for approval as an American Standard the proposed revised American Standard Code for Information Interchange (Document X3.2/206, January 21, 1965). This proposed standard has been approved by Sectional Committee X3, Computers and Information Processing, by a vote of 32 in favor, 1 opposed and none abstaining. Two ballots were not returned.

The sole negative note was cast by the Joint Users Group. This vote was originally cast as a conditional affirmative but became a negative when the stated conditions were not met prior to the close of the letter ballot period. Both the JUG ballot (with comments) and the X3.2 response to these comments are attached.

The proposed revised ASCII is the first revision of the ASCII (X3.4-1963) and was approved by Subcommittee X3.2 by a unanimous letter ballot vote and forwarded to X3 on January 26, 1965. At its meeting of September 16, 1965, the Sectional Committee unanimously approved a motion that, "X3 forward this pAS (p rASCII) to the Sponsor for submission to ASA for processing as an American Standard."

The Sponsor has found the proposed standard to be technically accurate. We therefore request that the proposed revised American Standard Code for Information Interchange be adopted as an American Standard.

(over)

The document, as transmitted, contains a number of editorial changes. All of these are noted in the text and should be incorporated in the printing of the standard.

Cordially,
C. A. Phillips by Paul B.
C. A. Phillips, Director
Data Processing Group/BEMA

CAP:ch

OCT 5 1965

ASA Note: This submittal is being referred to the Information Processing Systems Standards Board for action, and has been duplicated for the information of the Standards Council and officers of other standards boards. A copy of the proposed revision is on file in the ASA office, together with the exhibits mentioned herein, and is not enclosed with this copy of the submittal.

R E Gay
R. E. Gay
Managing Director

JK

Dartmouth College HANOVER · NEW HAMPSHIRE · 03755

Computation Center

17 May 66.

X3.2.4/160
MAY 17, 1966

December 21, 1965

Secretary X3
Business Equipment Manfacturers Association
235 East 42nd Street
New York, New York 10017

Dear Sir:

In regard to the Proposed Revised American Standard Code for Information Interchanged as published in the April, 1965 Communications of the ACM, I would like to make one suggestion: pr ASCII

There does not appear in the list of graphic characters any reference to the up arrow symbol, which is very commonly used to denote exponentiation. This could easily be remedied by eliminating the vertical line appearing in column 7, row 14 and replacing the symbol in that position with an upwards arrow.

Other graphics which have been omitted are the backward slant and, to a lesser extent, the logical operators (especially "or" and "and".) I do not feel nearly as strongly about this latter group of characters however.

Very truly yours,

Thomas E. Kurtz

Thomas E. Kurtz
Director

CBI 81/20/1

JAN 17 1966

Dr. Thomas E. Kurtz
Director, Computation Center
Darthmouth College
Hanover, New Hampshire 03755

Dear Dr. Kurtz:

Your letter of December 21, 1965, addressed to the Secretary of X3 concerning the proposed revision of ASCII has been forwarded to me.

We appreciate greatly your observation that there is no reference to the "up arrow" in the proposed revision of ASCII published in Communications of theACM in April 1965. This is an editorial oversight. You will note in section 4.2 that some of the graphics carry an alternate name enclosed in parentheses. At one time the character "Circumflex" in position 5/14 carried "up arrow" as an alternate name. It was not our intention to remove that concept completely, but apparently we succeeded in doing just that.

You will note on page 211, paragraph 3.1, Section III 8 that "upwards arrow" is the primary significance of the graphic in 5/14 in the ISO 7-bit code table. It is our policy to keep ASCII as closely aligned to the ISO 7-bit code as possible, and we appreciate you calling this discrepancy to our attention.

This and the other points in your letter will be considered at our X.3.2.4 meeting on 25 and 26 January 1966 in Los Angeles.

Very truly yours,

(Signed) [illegible]
John L. Little
Chairman, ASA X3.2.4

MINUTES OF MEETING NO. 24

X3.2.4

CODE DEVELOPMENT

Date: January 25-26, 1966

Place: International Hotel, Los Angeles, California

Presiding: J. L. Little, Chairman

I. Attendance

Name	Affiliation	Status	Jan. 25	Jan. 26
E. S. Fergusson	Rockford Research Inst.	M	X	X
D. A. Kerr	BTL	M	X	X
R. M. Ireland	Kleinschmidt, Div.SCM	O	X	
L. R. Turner	NASA Le RC	M	X	X
H. Hoots	Lindsay-Schwab Newspapers	M	X	X
E. F. Vidro, Jr.	Xerox Corporation	M	X	X
J. B. Booth	Teletype Corporation	A	X	X
W. S. Crosby	NCAR	O	X	X
H. F. Ickes	IBM	M	X	X
S. Erdreich	UNIVAC	M	X	X
R. Kudisch	CSI	M	X	X
G. E. Williams	Burroughs	O	X	
J. L. Little	NBS - BOB	M	X	X
H. Spielman	RCA	M	X	X
C. E. Mackenzie	IBM	O		X
H. Umstead	USAECOM	A		X

II. Membership Status

H. Tholstrup - Friden -Resigned from X3.2.4.
R. Kudisch - CSI -Became a member of X3.2.4.

III. Minutes of Previous Meetings

The Minutes of the October 20 Meeting No. 22 was approved as written.

Since there was no distribution of the Minutes for December 8 Meeting No. 23 prior to this meeting, acceptance of these Minutes was delayed until next meeting.

CBI 81/20/2

IV. Agenda

The following agenda was approved:

1. Membership Status.
2. Approve Minutes of Meetings No. 22 and 23, October 20, 1965 and December 8, 1965, respectively.
3. Review agenda for this meeting.
4. Distribute documents.
5. Possible graphic changes.
6. Prepare and approve draft instructions to U.S. Delegates for April TC 97/SC 2 meetings including:
   a. Control code definitions.
   b. Tilde vs. CS2 and other graphic problems.
   c. Transliteration of diacritical signs.
7. Approve Draft Working Paper on Code Extension for the TC 97/SC 2 April meeting.
8. Review Task Group's Scope and Work Program.
9. OCR and MICR Special Character Requirements.

V. Distribution of Documents

The following documents were distributed:

X3.2.4/140	Transliteration of Diacritical Signs; Letter to J. L. Little from J. F. Auwaerter; December 15, 1965.
X3.2.4/141	Definition of SOH; excerpt from X3.3 Subcommittee Document on Control Definitions.
X3.2.4/142	Definition of CAN (Cancel); January 25, 1966.
X3.2.4/143	Request for Graphic Reservation from X3.4; Memorandum to X3.2 from Task Group X3.2.4 from J. L. Little, January 20, 1966.
X3.2.4/144	Resolution of X3.2.4 to X3.2 on Deferring Publication of ASCII, Document X3.4 - 1965; January 26, 1966.
X3.2.4/145	Recommendation on ASCII Graphics; from Task Group X3.2.4 to 3.2; January 26, 1966.
X3.2.4/146	Draft Instructions to U.S. Delegates to ISO TC 97/SC 2; January 26, 1966.

I. Possible Graphic Changes

J. B. Booth moved that:

"X3 hereby requests that ASA defer the formal publication of the revised ASCII, Document X3.4 - 1965, pending resolution of a situation which arises from the following:

1. During the review of X3.2/206, a desire was expressed to place the commerical at (@) within the center four columns of ASCII. This request was not accommodated at that time since it appeared that the only acceptable relocation of commerical at would have conflicted with an expected change in the ISO 7-Bit Code proposal. The conflicting ISO change, however, did not materialize.

2. Subsequent to October 1965 meeting of ISO/TC 97, it appeared with some degree of certainty that ISO would discuss the possibility of minor change to the ISO 7-Bit Code proposal, especially if needed to effect concert with CCITT. A meeting of TC 97/SC 2 will be held in April of 1966. Part of the meeting will be a joint session with CCITT Alphabet Group. The area of possible change may well involve the area which had been under domestic consideration.

X3 will recommend that the U.S. delegation to April 1966 meeting of TC 97/SC 2 be instructed to support those ISO 7-Bit Code changes which are in concert with our domestic requirements.

Should the above mission be successfully accomplished, Subcommittee X3.2 will draft an amendment to document X3.4 - 1965 for incorporation therein of any changes. In addition, X3 recommends that the balloting in the various standards bodies be expedited (the addendum would not be made subject to the X3 publication interval). However, should a substantive negative position develop that would delay the expedited processing, the amendment should be withdrawn and the original document X3.4 - 1965 should be released by ASA for publication at that point in time.

Similarly, should the international situation after the SC 2 meeting not admit to any acceptable domestic changes, it is expected that X3.2 will recommend the immediate publication of X3.4 - 1965."

This passed by the vote of 10 - 0 - 0 and became document X3.2.4/144.

D. A. Kerr discussed the reasons for the possible moving of @ from position 6/0 to position 5/12 of the ASCII code table. He then moved that:

"X3.2 recommends to X3 that the following changes be made in X3.4 - 1965 prior to its publication: (list deleted to save space)". This was modified

Possible Graphic Changes (continued)

by J. B. Booth and the change accepted by Mr. Kerr, to read:

"Operating within the frame work of Document X3.2.4/144, X3.2.4 recommends to X3.2 that it authorize preparation of a draft amendment to X3.4 - 1965 which would provide for the assignment of the following graphics:

1. Move "@" from position 6/0 to position 5/12.
2. Move "~" from position 5/12 to position 7/14.
3. Move "|" from position 7/14 to position 7/12.
4. Move "¬" from position 7/12 to position 6/0.

provided that the ISO-CCITT joint resolution warrant these changes". This passed by a vote of 10 - 1 - 1 and became the basis for document X3.2.4/145.

VII. Draft Instructions for ISO/TC97/SC2

D. A. Kerr moved that the following draft instructions be accepted:

"1. Avoid delay of ISO First Draft Recommendation 6 and 7-Bit Code.

2. Support those ISO 7-Bit Code changes which

   a. are in concert with U.S. requirements,

   b. would improve the international utility of the ISO 7-Bit Code without prejudice to U.S. requirements.

The following material is supplied to the U.S. delegates with regard to the prosecution of the above objectives. Group I will be appropriate should favorable action be taken on the proposal made in Document X3.2.4/145 to amend X3.4 - 1965. Group II will be appropriate should this proposal be rejected.

Group I - The following would be acceptable:

   a. Remove indication of "@" as preferred symbol from national usage position 6/0.

   b. Remove indication of "CS2" as preferred symbol from national usage position 5/12.

   c. Show "@" as preferred symbol for national usage position 5/12.

   d. Show "~" as preferred symbol for national usage position 7/14.

Draft Instructions for ISO/TC97/SC2 (continued)

Group I (continued)

e. Make position 2/3 national usage and show preferred assignment (CS).

f. Show "#" (and not N°) in position 2/3 as preferred symbol where CS is not used.

g. Show "$" as preferred symbol in position 2/4 and not national usage.

Group II - The following would be acceptable:

a. Remove indication of "CS2" as preferred symbol from national usage position 5/12.

b. Show "~" as preferred symbol for national usage position 5/12.

c. Make position 2/3 national usage and show preferred assignment (CS).

d. Show "#" (and not N°) in position 2/3 as preferred symbol where CS is not used.

e. Show "$" as preferred symbol in position 2/4 and not national usage."

The above instructions were accepted by a vote of 9 - 0 - 2 and was in part the basis for document X3.2.4/146.

H. Ickes moved that:

"The U.S. has no advance position on preferred substitutes for diacritical marks not present in the ISO 7-Bit Code." This passed by a vote of 10 - 0 - 1 and was in part the basis for document X3.2.4/146.

Control Code Definitions - R. Kudisch moved that: "The U.S:

a. Supports the substance of the ASCII definitions for control characters.

b. Does not object to "transmission control" in place of "communication Control" or other minor differences of wording.

VII. Draft Instructions for ISO/TC97/SC2 (continued)

Control Code Definitions (continued)

c. With respect to specific characters:

ETB - Advocates deletion of the sentence in the ISO definition which reads "This character may be added to or deleted from a character sequence at any point in the data flow path without altering the interpretation of data".

ETX - Suggests deletion of the sentence in the ISO definition which reads "In systems employing error-control, there is a possibility that the error-control character (s) may follow ETX character".

EOT - Advocates removal of parenthetical expression "(everyone of which must be terminated by the ETX character)".

ACK - Suggests that the examples be cited only as examples, and advocates that the word "correct" be deleted.

DLE - Advocates the substance of the ASCII definition.

CAN - Supports the ISO definition, and opposes the TC97/SC6 recommendation at this time.

NUL - Advocates the substance of the ASCII definition.

SS - Advocates the deletion of the second and third sentences of the ISO definition which reads "The SS character may be used for transmission control purposes. If a character is required for terminating a special sequence, the SI character should be used".

SO - Supports any change limiting the effects of SO to graphics only.

ESC - Advocates the substance of the ASCII definition."
This motion was accepted by a vote of 10 - 0 - 1 and formed in part the basis for document X3.2.4/146.

III. Approve Draft Working Paper on Code Extension

Copies of the Draft Working Paper on Code Extension were not available for distribution. Work on this paper was delayed until the next meeting of the Task Group.

IX. Review of Task Group's Scope and Work Program

Work on the Task Group Scope and Work Program was delayed until a request from X3.2 is received.

X. Special OCR & MICR Symbols

Work in this area of special OCR & MICR symbols was delayed because a representative of X3.1 was scheduled to speak to the X3.2 Subcommittee on January 27, 1966.

XI. Next Meeting of Task Group

The next meeting of Task Group X3.2.4 will be held at BEMA Headquarters, New York City during the week of March 7, 1966.

E. F. Vidro, Jr.

E. F. Vidro, Jr., Secretary X3.2.4

EFV:fw

February 16, 1966

MINUTES OF MEETING NO. 25

X3.2.4

CODE DEVELOPMENT

DATE: March 8-9, 1966

PLACE: BEMA New York, New York

PRESIDING: J.L. Little-Chairman

5/.13 #AMM

I. ATTENDANCE

NAME	AFFILIATION	STATUS	MARCH 8-9	
L.R. Turner	NASA-Lerc	M	X	X
E.S. Fergusson	Rockford Research Inst.	M	X	X
W.L. Huf	Navy	M	X	X
D.A. Kerr	BTL	M	X	X
R.J. Donahue	Mergenthaler Linotype	M	X	X
H. Hoots	Lindsy-Schaub Newspapers	M	X	X
H.F. Ickes	IBM	M	X	X
W.S. Crosby	NCAR	M	X	X
E.F. Vidro, Jr.	Xerox Corp.	M	X	X
E.A. Kiely	UNIVAC	A	X	
J.L. Little	NBS-BOB	Ch	X	X
J.B. Booth	Teletype	M	X	X
B.V. Magee	US Army Com.	M	X	
H.C. Umstead	USAECOM	A		X
E. Avakian	Bunker Ramo	M		X
R. Kudisch	CSI	M	X	X
N. Clark	Control Data Corp.	O		X

II. Membership Status

W.S. Crosby of National Center for Atomspheric Research was accepted as member of Task Group X3.2.4..

III. Minutes of Previous Meetings

The minutes of the December 8 meeting No. 23 were accepted with the following editorial corrections:

Section IV.-Item 9-Should be "ISO" instead of "150"
Section VI. Second line should read "...Ad Hoc Committee on..."
Secion IX. Second line should read "...of b8=0 for..."

No distribution of the minutes for January 25-26 meeting No. 24 was made prior to this meeting. The acceptance of these minutes was delayed until the next meeting.

IV. Agenda

The following agenda was approved:

1. Membership Status
2. Approve minutes of meetings No. 23 and 24, December 9, 1965 and January 25-26, 1966 respectively.
3. Review agenda for this meeting.
4. Distribute Documents
5. Review X3.4 request for the base 10 reservation.
6. Review findings of the Ad Hoc Meeting of March 7, 1966, or recommended assignments of OCR and MICR Special Symbols in the Code Table.
7. Review TC 97/SC6 need in the Code Table for:
    A. A function to be used as a substitute character.
    B. A function to be used to indicate that the associated group is in error.
8. Review instructions to U.S. Delegates to ISO/TC97/SC2.
9. Status of U.S. Delegates to ISO/TC97/SC2.
10. Review Draft of Code Extension Working Paper.
11. Review Scope and Work Program of X3.2.4. for 1966.

V. Distribution of Documents

The following documents were distributed:

X3.2.4/147	Code Table & Definition Comparisons between ISO, RASCII, and CCITT.
X3.2.4/148	Department of Army Opposed to Changes in ASCII; Letter from R.S. Boykin, February 25, 1966.
X3.2.4/149	Typesetting Practice;Harold Hoots, January 20, 1966.
X3.2.4/150	Draft-Code Extension in the American Standard Code for Information Interchange; D.A. Kerr, March 1, 1966.
X3.2.4/151	Standard Representation of Accented or Synthesized Characters in ASCII; Memorandum to X3.2.4 from L.R. Turner, February 17,1966.
X3.2.4/152	Letter on Substitute Character; to J.L. Little from J.F. Auwaerter, February 9, 1966.
X3.2.4/153	Thoughts on Instructions to Delegates; Letter to J.L. Little from J.F. Auwaerter, January 31, 1966.

VI. X3.4 Request for Base 10 Reservation

D.A. Kerr moved that "X3.2.4 write a polite negative reply to X3.4's request." This passed by unanimous vote. L.R. Turner will write the reply.

VII. Assignment of OCR & MICR Special Symbols in the Code Table

J.L. Little reported on the Ad Hoc Meeting of X3.2, X3.1 and X3.7 representatives on the assignment of OCR and MICR Special Symbols in the Code Table. A discussion of the over all subject followed. D.A. Kerr moved that "X3.2.4 recommend to X3.2 that X3.2 recommend to X3.1 that the 3 OCR special symbols be coded as graphic substitutions in ASCII as follows: Assign 3 OCR specials of OCRA and OCRA extended as substitute graphics in positions 3/12, 3/14, and 5/15. X3.2 recommend to X3.7 that the 4 special MICR Symbols of E 13B be coded as graphic substitutions in ASCII in 3/10 through 3/14." This was defeated by a vote 2-2-8.

John Booth then moved that: "The Chairman of X3.2.4 prepare a letter over the signature of the chairman of X3.2 to X3.1 and X3.7 recommending that the OCR & MICR standards be amended to specify graphic substitutions of ASCII to accommodate the 3 special OCR symbols; the 4 special MICR symbols of E13B and the 5 special MICR symbols of MICR symbols of CMC7. The recommended assignments are as follows:

a) Assign 3 OCR specials (hook fork, chair) of OCR-A extended as substitute graphic in (positions) 3/12, 3/14, 5/15 (of ASCII Code Table.)

b) Assign 4 MICR specials of E13B in (positions) 3/10 through (of ASCII Code Table).

Note: The letter should contain an opening paragraph which points out that ASCII will not be amended to specify any given graphic substitution." This passed by a vote of 9-0-2.

VIII. Review of TC 97/SC6 Needs

TC97/SC6 finds that requirements exist for a function to be used as a substitute character, and a function to be used to indicate that the associated group is in error. X3.2.4 reviewed the needs and does not desire to use the Control Character Cancel for these purposes.

Mr. Fergusson moved: "X3.2.4. recommend that no specific character be specified as a substitute to replace a character which is determined to be in error." This passed by a vote of 13-0-0. Mr. Fergusson also moved: X3.2.4 reaffirm ASCII definition of Cancel, Document X3.2.4/142 (Draft Instructions to U.S. Delegates to ISO TC97/SC2)." This passed by a vote of 10-2-1.

IX. Instructions to U.S. Delegates to ISO/TC97/SC2

X3.2.4 reviewed document X3.2.4/146. After a discussion of considerable length, John Booth moved: "section 2 of document X3.2.4/146 be acceptable as modified" (deletion of second paragraph of section 2; deletion of the words "Group I", deletion of C,D,E,F,G of Group I; deletion of the word "Group II-the following would be acceptable:" deletion of A, and B of Group II.) This passed by a vote of 10-1-1.

Document X3.2.4/146 was further discussed and then Doug Kerr moved: "X3.2.4 accept the entire document X3.2.4/146 as modified and forward through X3.2" This passed by a vote of 9-1-2. The modified document X3.2.4/146 became document X3.2/362.

X. U.S. Delegates to ISO/TC97/SC2

The delegation chosen to discuss codes at the ISO/TC97/SC2 is as follows:

J.L. Little
D.A. Kerr
S. Erdreich or C.E. Mackenzic
Nelson

XI. Scope and Program of Work

The Task Group felt that the scope submitted December 2, 1964 was still appropriate. It was "to develope the Coded character set for general information interchange and any revisions or variations which may be appropriate; to define associated characters, functions, and terms; to develope general logical conventions for the effective use of the code other than those associated purely with media representations or data communications procedures."

The work program is:

a. code extension
b. code maintenance
c. develope general logical conventions for the effective use of the code.

XII. Code Extension Paper

The Task Group spent the remaining part of the afternoon (March 9) reviewing and making editorial corrections to document X3.2.4/150, Code Extension in the American Standard Code for Information Interchange. This modified and corrected document will be sent to X3.2.4 and X3.2 members for comment.

XIII. Next Meeting

The next meeting of Task Group X3.2.4 will be in Washington, D.C. during the week of May 16, 1966.

E.F. Vidro, Jr.
E.F. Vidro, Jr.
Secretary

EFV:f

AMERICAN STANDARDS ASSOCIATION
INCORPORATED
10 East 40th Street New York, N. Y. 10016
ASA

SECTIONAL COMMITTEE CORRESPONDENCE

X3.2/369
17 March 1966

NMAH 310/5

Minutes of Meeting #51 - Subcommittee X3.2 March 10 and 11, 1966

Presiding Officier: Mr. L. L. Griffin, Chairman (part-time)
Mr. R. M. Brown, Vice-Chairman (part-time)

Time: 9:00 am to 5:00 pm March 10, 1966
9:00 am to 4:30 pm March 11, 1966

Place: BEMA Headquarters, New York City

1. Attendance

Appendix A

2. Minutes of Previous Meeting

Minutes of Meeting #49 (X3.2/323) were approved as submitted.

3. Membership

Mr. J. Windhorst, CDC, nominated Mr. Neil Clark to replace him as principal member.
Mr. C. M. Riggle was nominated as alternate member to X3.2 from CDC. A motion for approval of Mr. Riggle was moved by D. Kerr and seconded by J. Smith. Motion passed/unanimous approval.
Mr. W. McKenzie, by letter, nominated Mr. Ferdinand Scharf, of the New York Stock Exchange, to be his alternate to X3.2.
Mr. T. J. MacNamara, by letter, nominated Mr. R. Wing to be the principal member to X3.2 for Honeywell and for Mr. J. Klapkin to be the alternate member. In addition, Mr. Frank Schaller was nominated to the the Honeywell member to X3.2.3.
Mr. G. L. Murphy, by letter, nominated Mr. James Chestnut to be the alternate member to X3.2 for Ampex and also to be a member of X3.2.1.

4. Agenda

Adopted as amended. See Appendix B

5. Distribution of Documents

Appendix C

6. Action on the ad hoc Group's report on Rules and Procedures

Report made by Mr. R. Brown. A discussion of document X3.2/321, which presents the findings of the committee, took place. Some disagreement over certain of the items was evident and led to a statement by Mr. Brown that a revised draft will be prepared to reflect the sentiments expressed and will be sent out for formal comments during the next three weeks.

7. Methods and Procedures to accelerate Progress on Standards

The discussion of this topic followed and various points of view and suggestions were brought forth. As a result of this discussion, Mr. Auwaerter moved and Mr. Windhorst seconded the following motion: "The chairman of X3.2 shall establish an ad hoc group, composed of himself and task group chairmen, to examine and develop recommendations for accelerating progress on standards."

Motion passed 17-1-0

8. Review of Work Program

See Appendix D

In the course of the discussions over the various scope statements and work programs, several motions were made. A motion on X3.2.2 was made by Mr. Mackenzie and seconded by Mr. Gross -"X3.2 recommends that X3.2.2 devote more time to the investigation of the standardization of the edge-punched document than has been done previously."

Motion passed 11-7-4

The following revised scope for X3.2.5 was produced: The standardization of information formats as required for use of standard codes and input-output media in information interchange. A motion was made by Mr. Mendelsohn and secnnded "To replace the words 'information formats' with the words 'tape labels'."

Motion defeated 2-9-8.

A motion was then made by Mr. Gross and seconded by Mr. Smith "To accept the scope as written."

Motion passed 12-2-5

The following scope for X3.2.6 was prepared.
Scope - Contribute to the establishment of definitions required for the use and understanding of the standards prepared by Subcommittee X3.2 and contribute to a general glossary of data processing terms.

Motion passed 17-0-1

8.1 Review of TC/97 Structure

This item was added to the agenda so that the members could obtain a clear picture of the TC/97 organization.

9. Report of X3.2.1 Task Group

Mr. J. Smith of IBM reported for Mr. Taunt of GE. The subcommittee worked on establishing an international position with respect to unrecorded tape and continued working on a 1600 CPI magnetic tape standard.

9.1 Action on X3.2.1 Report

A discussion of instructions to delegates, document X3.2/356, took place and several amendments to the document, as exhibited in Appendix C, were made.

The following motion was made by Mr. Smith and seconded by Mr. Auwaerter: "Document X3.2/356, as amended, be accepted as the instructions to the U. S. delegation to the ISO/TC97/SC4/WG1 April '66 meeting in Warsaw, Poland and to the ISO/TC97/SC2 April '66 meeting Paris, France."

Motion passed 16-1-0

Further disucssion indicated that instrumentation tape will be on all international work programs and that the U. S. is not prepared. EIA, P8.6 will not supply the expert assistance required.

The following motion was moved by Mr. S. Erdreich and seconded by Mr. J. Smith: "X3.2 requests that X3 and its sponsor provide expert assistance on instrumentation tape in the form of a U. S. delegate to the ISO/TC97/SC4/WG1 April '66 meeting in Warsaw, Poland."

Motion passed 16-0-0

10. Report of X3.2.2 Task Group

Mr. J. Auwaerter reported. Mr. Auwaerter described current activities within the subcommittee and discussed the instructions prepared to the U. S. delegation. He took particular note of the continuing effort on the physical characteristics of paper tape. He indicated that tests to measure punch life, relative to oil content in paper tape, are being carried out.

10.1 Action on X3.2.2 Report

Mr. Mendolsohn moved and Mr. Kerr seconded the following motion: "Document X3.2/357 be approved as instructions to the U. S. delegation to SC2 on Punched Tape Coding at the April '66 meeting in Paris, France."

Motion passed 19-0-0

Mr. Auwaerter moved and Mr. Kudisch seconded the following motion: "Approve distribution of document X3.2/353 (pAS Take-up Reels for 1 inch perforated tape) as an international working paper."

Motion passed 14-0-4

11. Report of ad hoc Group A (Symbols for Controls)

Mr. Fergusson reported. There are still several problems extant in this area, particularly in bringing together the current military specifications and those of ECMA with the criteria and views of the ad hoc group. Progress is being made in bringing divergent views together, but some delay is expected in producing the standard for symbols for controls.

12. Report of X3.2.3 Task Group

Mr. R. Brown reported for Mr. Mackenzie. The committee edited Document X3.2/303 to remove typographical errors. They are deferring work on the size and location of a hole standard until after April.

12.1 Action on X3.2.3 Report

Mr. Auwaerter moved and Mr. Brown seconded the following motion: "Document X3.2/302 is forwarded to X3 together with such editoral changes as X3.2.3 shall determine necessary, upon reviewing the comments received with the affirmative ballots."

Motion passed 19-0-1

Mr. Auwaerter moved and received a second for the following motion: "Document X3.2/340 be approved as instructions to the U. S. delegation to SC2 on Punched Card Coding at the April '66 meeting in Paris, France."

Motion passed 13-1-5

13. Report of X3.2.4 Task Group

Mr. Little reported. The committee prepared recommendations for the U. S. delegation to the international meeting and continued with their program of work.

13.1 Action on X3.2.4 Report

Some discussion of document X3.2/363 took place. Mr. Smith moved and received a second on a motion to terminate debate on this issue.

Motion passed 13-3-2

Mr. Auwaerter moved and Mr. Smith seconded the following motion: "The instructions to the U. S. delegation to SC2 on OCR/MICR coding at the April '66 meeting in Paris,France be--a. the resolution contained in X3.2/365 and b. for technical discussion, support the views stated in document X3.2/363, as amended."

Motion passed 14-1-3

Document X3.2/362 replaces the previous instructions to the delegation on codes, Document X3.2/364.

Mr. Auwaerter moved and Mr. Erdreich seconded the following motion: "Amended document X3.2/362 by striking the section beginning 'the following...and points A through E."

Motion passed 11-0-5

Mr. Kudisch moved and Mr. Kerr seconded the following motion: "Document X3.2/362 be approved, as amended, as instructions to the U. S. delegation to SC2 on 6 and 7 bit codes at the April 66 meeting in Paris, France."

Motion passed 16-0-2

It was noted that a draft tutorial paper on code extension would be circulated to members of X3.2 and all task group members during the next two weeks on an informal basis.

Mr. Auwaerter moved and Mr. Erdreich seconded the following motion: Document X3.2.4/150 be distributed to X3.2 for letter ballot, requesting publication by X3 and also approving its distribution internally, both as a tutorial paper on code extension."

Motion passed 16-0-0

14. Report of X3.2.5 Task Group

Mr. Gross reported. Work continued on the magnetic tape labeling standard.

14.1 Action on X3.2.5 Report

Discussion of document X3.2/352 proposed response to Mr. Mackenzie's memorandum took place. It was agreed, that while technically it represents the view of X3.2, that certain of the personal views presented were inappropriate. Mr. Brown moved and Mr. Fergusson seconded the following motion: "The chairman of X3.2 is directed to form an ad hoc group to prepare and forward to X3 a response to Mr. Mackenzie's memorandum X3.2/330."

Motion passed 10-4-1

15. Report of X3.2.6 Task Group

No action taken.

16. International items not acted on under Task Group items

Mr. Erdreich moved and Mr. Kudisch seconded the following motion: "Document X3.2/332 and X3.2/354 together be approved as a U. S. working paper for transmission to SC2 on 6 and 7 bit codes at the April '66 meeting in Paris, France."

Motion passed 11-4-0

Mr. Auwaerter moved and Mr. Kerr seconded the following motion: "X3.2 authorizes the taking of a letter ballot on approving a change in the ASCII interchanging the graphics, 'accent grave' and 'commercial at', if such a change comes out of the April SC2 meeting, and that the Chairman of X3.2 be authorized to request comparable action of X3."

Motion passed 12-0-2

Mr. Auwaerter moved and Mr. Smith seconded the following motion: "Document X3.2/366 be approved as instructions on keyboards to delegates to the April 66 SC2 meeting in Paris, France."

Motion passed 11-0-0

16.1 Delegation to ISO/TC97/SC2 April 25-29, 1966 meeting in Paris

Mr. Auwaerter moved and Mr. Smith seconded a motion that "The below listed people be approved as the U. S. delegation to ISO/TC97/SC2 April '66 meeting in Paris, France."

Delegates to SC2
Auwaerter - Chief Delegate
Little
Kerr
Mackenzie
Smith
Mullendore
Taunt

Motion passed 12-0-1

16.2 Delegation to ISO/TC97/SC4/WG-1 meeting of April 18-22, 1966 - Warsaw, Poland

Mr. Auwaerter moved and Mr. Kerr seconded a motion that "The below listed people be approved as the U. S. delegates to ISO/TC97/SC4/WG-1 meeting in Warsaw, Poland."

Delegates to WG-1

Taunt - Chief Delegate
Smith
Kauffield
Wilkinson
Aschbridge

Motion passed 12-0-1

Mr. Auwaerter moved and Mr. Fergusson seconded a motion that "Mr. Mackenzie be endorsed as candidate chairman for ISO/TC97/SC4/WG-1."

Motion passed 12-0-1

17.1 Siemens/Halske Joint Meeting

The meeting with Mr. Wustenay of Siemens & Halske was called to the attention of the members and they were requested to attend.

X3.2/369
17 March 1966

APPENDIX A

ATTENDANCE LIST

Subcommittee X3.2 Meeting #51
BEMA Headquarters-New York City
March 10 & 11, 1966

March 10, 1966

NAME	ORGANIZATION	MEMBER, ALTERNATE OBSERVER, CONSULTANT STATUS
L. L. Griffin	N. B. S.	C
R. M. Brown	DOD	M
S. Erdreich	UNIVAC	M
C. E. Mackenzie	IBM	M
J. L. Smith	IBM	A
J. L. Little	NBS-BoB	M
John Klapkin	Honeywell	A
R. E. Mullendore	Census	A
W. U. Osterman	Friden	A
G. E. Williams	Burroughs	M
M. Mendelsohn	Monroe	M
M. R. Jepson	AT&T Co.	M
E. S. Fergusson	Rockford Research Institute	O-Proxy for Taunt, GE
V. L. Thompson	UNIVAC	O
E. F. Vidro, Jr.	Xerox Corporation	M
R. J. Donahue	Mergenthaler Linotype Co.	M
F. Scharf	N. Y. Stock Exchange	A-Proxy for McKenzie
M. F. Huf	Navy	O
L. R. Turner	NASA LeRC	O
Marge Hill	CDC-repres. X3.6	O
H. L. Gross	NCR	A
R. Kudisch	CSI	M
J. Chestnut	Ampex Corp.	O -Proxy for G.L.Murph
D. A. Kerr	BTL	M
Harold Hoots	Lindsay-Schaub Newspapers	M
J. F. Auwaerter	Teletype Corp.	M
Neil Clark	Control Data Corp.	O
John Windhorst	Control Data Corp.	M
Herbert Spielman	RCA	M
Eric H. Clamons	UNIVAC	C
J. K. Nelson	Western Union	M
Emik Avarian	Bunker Ramo	M

X3.2/369
17 March 1966

APPENDIX A

ATTENDANCE LIST

Subcommittee X3.2 Meeting #51
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NAME	ORGANIZATION	MEMBER, ALTERNATE OBSERVER, CONSULTANT STATUS
L.L. Griffin	N. B. S.	C
R. M. Brown	DOD	M
S. Erdreich	UNIVAC	M
E. S. Fergusson	Rockford Research Institute	O
John Klapkin	Honeywell	A
Herbert Spielman	RCA	M
G. E. Williams	Burroughs	M
J. K. Nelson	W. U.	M
F. Scharf	N. Y. Stock Exchange	A
L. R. Turner	NASA LeRC	O
H. L. Gross	NCR	A
R. Kudisch	CSI	M
D. A. Kerr	BTL	M
Harold Hoots	Lindsay-Schaub Newspapers	M
E. F. Vidro, Jr.	Xerox Corp.	M
J. L. Smith	IBM	A
J. L. Little	NBS-BoB	M
Neil Clark	Control Data Corp.	O
Marge Hill	CDC-repres. X3.6	O
M. Mendelsohn	Monroe	M
J. Auwaerter	Teletype Corp.	M

Sent with X3.2
meeting announcem

HARVARD COMPUTING CENTER
CAMBRIDGE, MASSACHUSETTS 02138

March 10, 1966

Mr. C. A. Phillips
Chairman ASA Sectional Committee X3
BEMA
235 E. 42nd Street
New York, New York

Dear Mr. Phillips:

The SHARE organization (users of IBM scientific computers: models 704, 709, 7040, 7044, 7090, 7094, S/360) is sorely concerned over certain activities which have taken place in recent months within the Department of Commerce, ASA X3, etc. which appear to indicate a trend toward the default adoption of ASCII as a code for the internal representation of graphic characters within computers. The SHARE Executive Board has authorized and requested me to transmit the following resolution to you, and presumably thus to X3.2:

"SHARE believes that an American Standard should be established for binary character codes used for internal character encoding in binary computers (ICEBC). SHARE volunteers to serve actively on a committee to establish such standards. SHARE believes that all manufacturers of binary computers and all user organizations for these machines should and would be happy to serve on such a committee."

In submitting this resolution to you, I presume that there does not currently exist within X3.2 a committee actively in pursuit of the above goal (ASA - ICEBC). If this presumption is false, I would sincerely appreciate its correction.

Please note that SHARE's intent as stated above, is not necessarily to oppose the ultimate adoption of ASCII or any other character encoding as a candidate: our concern is, however, that if nothing is done within ASA, a

CBI 81/20/1

Sent with X3.2

default (and possibly very costly) choice will be made by the Federal Government or by the industry at large.

May I also suggest that the proper place for development of ICEBC may not be X3.2: X3.4 may well be the subcommittee most competent to formulate this particular code, and at any rate any development work in ICEBC should be very closely coordinated between X3.2 and X3.4

We will sincerely appreciate your prompt action on this resolution.

Respectfully submitted,

Lynn D. Yarbrough

Lynn D. Yarbrough
Manager, SHARE Standards Project

LDY/la

cc: Roy S. Dickson, SHARE
President (PP)
Ben R. Faden, SHARE Administration
Division (NG)
T. B. Steel Jr., SHARE-JUG Liaison (RL)

Association Française
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23, rue N.D. des
Victoires PARIS 2ème
Tél : 236 95-80

I S O
ORGANISATION INTERNATIONALE DE NORMALISATION
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO/TC 97/SC 2
JEUX DE CARACTERES ET CODAGE

Secrétariat :
AFNOR - (France)

ISO/TC 97/SC 2
(Sec.-64) 213 F/E

~~Décembre 1966~~

PROJET DE RAPPORT
DE LA 3ème REUNION DU SOUS-COMITE
ISO/TC 97/SC 2 JEUX DE CARACTERES ET CODAGE
(Paris, 25 au 29 avril 1966)

DRAFT REPORT
OF THE THIRD MEETING OF SUBCOMMITTEE
ISO/TC 97/SC 2 CHARACTER SETS AND CODING
(Paris, April 25th to 29th 1966)

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FL/rm.

.../...

310/5

MMA+T

LISTE DE PRESENCE *
ATTENDANCE LIST *

PRESIDENT : M. H. FEISSEL (France)

ALLEMAGNE		
MM.	H. SEIFERT	BASF, Ludwigshafen
	W. HOFMANN (SC 6)	IBM Deutschland, Boeblingen
	G. RENELT	Philips, Hamburg
	A. SCHULZ	IBM Deutschland, Sindelfingen
	G. E. WILLIBALD	Telefunken, Backnang
CANADA		
M.	D. A. CARRUTHERS	Data Products Planning Bell Telephone Company of Canada
ETATS-UNIS		
MM.	J.F. AUWAERTER	Teletype Corporation
	D.A. KERR	Bell Telephone Labs
	J.L. LITTLE	U.S. Bureau of the Budget
	C.E. MACKENZIE	IBM Corporation
	R.E. MULLENDORE	U.S. Bureau of the Census
	J.L. SMITH	IBM Corporation
	J.E. TAUNT	General Electric
	✓ M. HILL - OBSERVER	
FRANCE		
MM.	de BOURNONVILLE	Cie Bull-General Electric
	L. DURAND	Cie Bull-General Electric
	J. GUILHAUMOU	Cie IBM-France
	M. HUMBERT	Cie IBM - France
	L. de VILMORIN	—

HOSTEN

.../...

---

* Le nom du porte-parole est souligné.
The name of the head of delegation has been underlined.

ITALIE	
MM. ZAFFIGNANI	Olivetti
G. DAL MASCHIO	IBM-Italia
L. LAURI	Olivetti - General Electric
JAPON	
MM. T. SEKI	Oki Electric Industry
K. SEGAWA, observer CCITT	Nippon Electric Co Ltd
PAYS-BAS	
M. H. M. A. van der WERFF	IBM
ROYAUME-UNI	
MM. G. CHADWICK	BSI
G.T. BALL	
J.R.W. SMITH	BTR
SUISSE	
M. D. HEKIMI	ECMA
ECMA	
MM. R.W. BEMER	
E.G. CLUFF	
A.J. RAPHAEL	
de BOURNONVILLE	
W. DOHN	
Observateurs	
M. P.B. GOODSTAT	BEMA
Miss HILL	
Secrétariat ISO/TC 97/SC 6	
M. F.W. WARDEN	
Secrétariat ISO/TC 97/SC 2	
M. R. FRONTARD	Directeur Général Adjoint AFNOR
Mlle F. LIMA	AFNOR
M. J. LOCHARD	AFNOR
Interprète	
Mlle GIANNINI	

REPORT

for Monday, April 25, 1966

1. OPENING OF THE MEETING

M. Frontard opened the meeting and welcomed the delegates in behalf of the general management of the AFNOR.

He emphasized the particular stress of this series of meetings by recalling the principal stages in the production of the set of 7 element coded characters; during the Tokyo meeting of the full ISO/TC 97 Committee, a combined ISO/CCITT meeting proved necessary to resolve the final difficulties before publication of the 7 element code by both organizations.

This meeting will open Tuesday, April 26. The Secretariat of sub-committee 2 has also grown enough to call on a representative of the Secretariat of sub-committee ISO/TC 97/SC 6, TRANSMISSION OF CODED INFORMATION, directly interested in this work. Thus, a general survey of the ISO/TC 97 can be presented to the CCITT.

However, neither must we forget the materialization aspect of the sets of coded characters on the various information supports; this is why a meeting of an ad hoc work group, entrusted with materialization on 7 and 9 track magnetic tape, will be held at the same time as the combined ISO/CCITT meeting.

2. ROLL CALL OF THE DELEGATES

Using document 97/2 N 177, M. Frontard proceeded to call the roll of delegates. The final list appears on pages 2 and 3 of this report.

May 1964), recorded in document 97/2 N 124, pages 18 to 23. He particularly emphasized the following Resolutions:

- Resolution 4 - Materialization on punched tape

The New York decisions(document 97/2 N 126) were confirmed by the Turin meeting (May, 1965), and document 97/2 N 135 was approved by a majority of members of the sub-committee; item 12 in the present agenda will indicate the action by the full ISO/TC 97 Committee.

-Resolutions 5 and 6 - Sets of 6 and 7 element coded characters

Document 97/2 N 125, resulting from the New York decisions, was studied by the appropriate CCITT commission in October, 1964 and, in accord with the Secretariat of the full ISO/TC 97 Committee, a fourth preliminary project plan (Document 97/2 N 130) was prepared to take CCITT's observations into account.

The vote which followed in the full committee was plainly favorable, and the Committee's Secretariat sent the document to the ISO's Secretariat General.

However, during the Tokyo meeting (October, 1965), the CCITT representative presented some objections which seemed extremely important. The combined ISO-CCITT meeting will try to resolve them. Moreover, the Secretariat of sub- committee 2 has called on the Secretariat of sub-committee 6, dealing with the transmission of coded information.

- Resolutions 7,8,9,10 - Numerical Command of Machine Tools

The ISO/TC 97/SC 8 sub-committee was created, and it operates independently of sub-committee 2. However, necessary liasons have been provided. It is enough to point out that it prepared a code plan for numerical command of machines, compatible with the 7 element coded set of sub-committee 2.

The Secretariat's oral report was approved by the delegations present.

7. REPORT BY A REPRESENTATIVE OF THE ISO/TC 97/SC 6 SUB-COMMITTEE ON THE PROBLEMS POSED BY USING THE ISO CODE IN TRANSMISSION

First, the President recalled the circumstances which led the Secretariat of sub-committee 2 to call upon a representative of sub-committee 6, in communication with the combined ISO-CCITT meeting, in order to define as much as possible a common ISO-CCITT position. He then gave the floor to M. Warden.

M. Warden indicated that sub-committee 6 wanted to open discussion on the following three points:

- definitions of transmission command characters,
- utilization of a substitution character
- structure of the characters.

Actually, the last point was concerned only with use of the code and not the code itself.

7.1 Use of a Substitution Character

Sub-committee 6 felt that a character was needed for the circumstance where an error had been detected in the text (on tape or card) but had not been able to be corrected during proofreading, and it was necessary to inform the receiver that this character was erroneous. It would also be desirable to anticipate the case where several characters in one bloc were erroneous.

7.2 Definitions of Transmission Command Characters

Document 97/2 N 186 proposed some modifications suggested by sub-committee 6. These were mainly to satisfy the CCITT's requirements on the one hand, and to use the code in transmitting data on the other. In particular, it would be best to specify "En code"(SI), "Hors code"(SO), "Nul" and "Echappement"(Escape) and to modify the definition of "Annulation" (Cancel),in connection with the request for a substitution character.

8. EXPLANATION OF SUB-COMMITTEE 2'S POSITION TAKING INTO ACCOUNT SOME OBSERVATIONS PRESENTED BY THE REPRESENTATIVE OF SUB-COMMITTEE 6

The President thanked M. Warden for this explanation and suggested immediate study of the problem related to the substitution character. It was recognized that the choice of the substitution character lay with sub-committee 2.

Several suggestions were presented, and the three solutions following were studied:

- the substitution character is defined by the actual position occupied by "Annulation" (Cancel) (the definition of this would be revised), and a sequence of characters defining cancellation of a bloc;
- the character "Souligné"(Emphasized) would mean "Substitution"when used without being preceded by the character "Retour arrière"(Go back), and the character "Annulation" would actually remain unchanged for the bloc;
- one of the 32 command characters will be taken as a substitution character, superceding one of those in the table, when creating a new denomination, for example. The character "Annulation" remains unchanged.

The third solution was the one finally retained, and the delegations present deemed it convenient to abolish the character "Début de séquence spéciale"(SS) [Start of special sequence] and to use the coded combination thus released for the substitution character, abbreviated "SUB". The representative of sub-committee 6 regarded this solution as acceptable. But no graphical representation was proposed.

The President suggested creation of an ad hoc group entrusted with preparing a document stating the points on which the sub-committee will come to an agreement in conjunction with the representative of SC 6.

This proposal was accepted, and MM. Warden (recorder), Chadwick, Dall, Mashic, Durand, Kerr, Raphael and Willibald will head this group.

Although it was not provided for in the agenda, the United Kingdom delegation reported the existence of problems posed by the actual table of 7 element code in the ISO/TC 97/SC 5 subcommittee, PROGRAMMING LANGUAGE. However, the Secretariat of this sub-committee has not taken any official steps with the Secretariat of sub-committee 2.

The problem of graphical representation of command characters was raised; it was recognized that it falls within the domain of sub-committee 2, and the President will revive this question at item 15 of the daily schedule: "Program of future work", with

ANNEXE A

RAPPORT DE LA REUNION MIXTE ISO - CCITT
CCITT/GM ALPHABET
ISO/TC 97/SC 2 JEUX DE CARACTERES ET CODAGE
(Paris, 26 au 28 avril 1966)

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3 - Compte rendu	-	Brief minutes	33 - 38	41 - 46
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Délégations CCITT

PRESIDENT :	M. FAUGERAS	Administration
BELGIQUE		
	M. H. SCHOON	Administration
CANADA		
	MM. D.A. CARRUTHERS	Data Products Planning Bell Telephone Company of Canada
	V.C. MACDONALD	Canadian National Telecommunications
ETATS-UNIS		
	M. NELSON	Western Union Telegraph Co
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	TORNATO	Administration
	VARGUES	Administration
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JAPON		
	MM. H. KAWABATA	Nippon Telegraph and Telephone
	HAYASHI	(Administration of Telecommunication in Temporary capacity)
	SEGAWA	(Administration of Telecommunication in Temporary capacity)
PAYS-BAS		
	MM. J.L. Van DALE	Administration
	SPOON	N.V. Philips'Telecommunication Industrie
PORTUGAL		
	MM. M. M. ATHAYDE	Administration
	A.R. ESTORNINHO	Administration

.../...

REPUBLIQUE FEDERALE D'ALLEMAGNE	
MM. BARDUA	Administration
GABLER	Administration
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URSS	
M. J. SAVITSKY	Administration
Mme N. MAXIMOVA (Interprète)	
UNION INTERNATIONALE DES CHEMINS DE FER	
M. A. BISOT	
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ORGANISATION INTERNATIONALE DE NORMALISATION

ISO/TC 97/SC 2
CHARACTER SETS AND CODING

Secretariat :
FRANCE

ISO/TC 97/SC 2
(Paris 66-18) 208 E

AMENDED

April 1966

CONCLUSION OF THE JOINT MEETING

ISO/TC 97/SC 2 - CCITT/GM ALP

PARIS, April 26th - 28th 1966

PRELIMINARY PARAGRAPH

The conclusions which follow have been set up jointly and agreed upon unanimously by the delegations attending the joint meeting of ISO/TC 97/SC 2 and CCITT/GM ALP held at Paris, April 26th, 27th, 28th 1966, acting for :

- either national delegations from Committee Members of ISO belonging to the following countries :

  CANADA, FRANCE, GERMANY, ITALY, NETHERLANDS, UNITED-KINGDOM, UNITED STATES,

- or national delegations from Country Members of CCITT :

  BELGIUM, CANADA, FRANCE, GERMANY, ITALY, JAPAN, NETHERLANDS, PORTUGAL, UNITED-KINGDOM, UNITED STATES, USSR,

- or observers from the following organizations :

  BEMA, ECMA, UIC and ISO/TC 97/SC 6 Secretariat.

1 - The delegations present express the wish that the Recommendation which will be published by ISO on the subject of 7-bit coded character set for information processing interchange results from the incorporation into the Draft Recommendation N 78 distributed by the Secretariat of Committee ISO/TC 97 of the amendments decided upon, either unanimously or by majority, during the joint ISO - CCITT meeting of April 26th, 27th, 28th 1966, as they are registered in the following documents :

- 97/2 N 193 (except : addition to § "Shift-Out" ; amendments to the definitions given in document 97/2 N 202),

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...

- 97/2 N 199 (except : addition to point I of a new paragraph 9 ; "change position 1/10 to SUB" ; amendment to the last line of note 8 ; adjunction at an appropriate place of a note indicating that characters £ and $ do not represent national currencies, but are symbols used in the designation of number of national currencies).

- 97/2 N 202 (except : the amendment to definition of "Cancel" ; addition of "(Stop)" at the end of definition of DC 4 ; deletion of the notes relative to NL, and US, the latter being to appear in the brief minutes of the meeting ; the definition of Escape is as in document 97/2 N 204).

- 97/2 N 204 (except : deletion of data on line 8 ; more the 3rd paragraph to become the last paragraph).

The delegations present, taking into account the above modifications, consider it proper to cease to consider as an "appendix being not part of the Recommendation" ; to designate this part "chapter V" ; to delete the note between brackets ; to add the following note under the title of the new paragraph :

"Some definitions in this paragraph are stated in general terms and more explicit definitions may be needed for specific implementation of the code tables. Such more explicit definitions may become the subject of other Recommendations". Paragraph 3 of the introduction would be corrected accordingly.

The delegations present wish that ISO applies for the approval of the so amended draft the most rapid processing possible.

2 - The delegations present believe that the publication by ISO of the Draft Recommendation improved by ISO and CCITT during the meeting will prove efficient only if the different national codes which will be established according to notes (3) and (3b) are themselves a result from a full agreement between the general needs of information processing and the specific needs of national and international transmissions.

They suggest that the Secretariats of Subcommittee ISO/TC 97/ SC 2 on the one part and of CCITT on the other part, consult one another to ensure the establishment of appropriate study groups, on a linguistic basis, and to ensure the outcome of these groups are properly coordinated.

BRIEF MINUTES

OPENING OF THE MEETING

The joint meeting CCITT/GM NEW ALPHABET - ISO/TC 97/SC 2 was opened under the double chairmanship of Mr. D. FAUGERAS (CCITT) and Mr. H. FEISSEL (ISO). On behalf of the AFNOR Direction Generale. Mr. FRONTARD welcomed the CCITT delegates. The list of all participants is given on pages 31 and 32.

Mr. CHESTERMANN (United Kingdom), Mr. HUMBERT (France), Mr. VARGUES (France), and Mr. LITTLE (USA) were appointed to the Editing Committee. The draft Agenda, with the reference ISO/TC 97/SC 2 (Sec.-51) 161 and CCITT/Sp A N 17, was approved.

For item 6 "Study of complementary elements to be added to the draft on 6 and 7-bit coded character sets", document 97/2 N 183 or CCITT/Sp A/GM ALP Temporary document 5 was considered as the basis for discussion.

Mr. FEISSEL also stated that document 97/2 N 193 "Report of the Ad Hoc Committee on DEFINITIONS" was prepared by Subcommittee ISO/TC 97/SC 2 "Character sets and coding" in liaison with a representative of the Secretariat of Subcommittee ISO/TC 97/SC 6 "Digital data transmission".

STUDY OF COMPLEMENTARY AMENDMENTS TO THE DRAFT ON 6 AND 7-BIT CODED CHARACTER SETS

The delegations present first asked not to take into consideration the 6-bit coded character set during the course of the joint ISO - CCITT meeting, because the CCITT does not intend to publish a document on this matter ; it is to be studied during the meeting Subcommittee 2.

Before going through document 97/2 N 183 (CCITT/GM ALP Temp 5), the USA delegation requested that amendments to the code table be as few as possible, several countries being already on the way on of implementing this code.

Sections 1 and 2 of document 97/2 N 183 (GM ALP Temp 5) were agreed upon by the delegations present.

Section 3 "Revision of the code table and notes" was then considered.

.../...

1) Diacritical sign "tilde" (~)

As proposed by document 97/2 N 183, the diacritical sign "tilde" was placed in position 7/14. The delegations further agreed that position 7/14 is reserved for an upper diacritical sign, the graphical representation of which may vary according to national use, provided it will no be the graphical representation of any other diacritical sign explicitely shown in the table.

The "tilde" is to be considered as the preferred character for this position. A new note has to be drafted accordingly. To comply with a request expressed by the USSR delegation, it was decided to add to position 7/14, and to positions 4/0 and 5/14 as well, a note stating that these 3 positions are available for national use when countries need 8 to 10 positions for this purpose.

The CCITT representative stressed that for international interchange, only th option given in the ISO Recommendation table for these 3 positions will be taken into account.

2) Commercial at (@)

It was decided to return this character to position 4/0 of the code table, the "grave accent" symbol being consequently in 6/0.

3) Currency signs

The French delegation recalled the two criteria to be fulfilled by currency signs :

- it is advisable to give to any country the capacity to represent its own currency signs,;

- besides, messages including currency data must be transmitted correctly from one country to another.

Technical Committee ISO/TC 68 "Standardization in the sphere of banking" has circulated a draft proposal on "graphical symbols of currencies for use in international relations". Many of these symbols are made with the crossed L (£) or crossed S ($) and no other special graphic is widely used in that list.

On the other hand, CCITT, during its BRUSSELS meeting (November 1964), proposed to use the Sun (¤) symbol to mean "the following is a currency sign", in lieu of CS1.

..../...

The delegations present were asked to express their preference for one of the two following alternatives :

1 - "Sun" ¤ symbol used for international interchange, CS2 reserved for national use.

2 - CS1 to be $ symbol with no national meaning, CS2 to be £ symbol with no national meaning.

The following delegations were in favor of option 2 :

CANADA
FRANCE
GERMANY
NETHERLANDS
SWEDEN
UNITED KINGDOM

The US delegation approved the use of dollar sign, but had no specific feeling on the choice of £ for CS2.

The Japanese delegation wished CS1 to be international and CS2 to be national.

Were in favor of option 1

ITALY
PORTUGAL
SWITZERLAND
USSR.

On this basis, it was decided to adopt the symbol $ as the first currency sign, in position 2/4.

The delegations present considered then the problem of the second currency sign. Document 97/2 N 183 suggested to exchange positions 2/3 and 5/12 in order to withdraw CS2 from the national options.

A long discussion took place on this matter and several solutions were considered, among which the main ones were :

1 - leave # in position 2/3 and put £ into 5/12 (for national use) ;

2 - place £ in position 2/3 with a note allowing those countries which do not need this symbol to replace it by the # symbol ;

3 - The second currency sign being £ is located in position 2/3, the # symbol is the recommended choice for position 5/12 (for national use).

..../...

Finally, after several votes, the second proposal was taken into account, with the following vote : among CCITT delegations : 7 in favor, 0 against, 4 abstaining ; among ISO delegations : 3 in favor, 2 against, 2 abstaining.

4) Graphic alternatives

The consideration expressed in section 3.4 of document 97/2 N 183 being taken into account, the proposal made to represent "vertical bar" as an alternative to "exclamation mark" and "logical not" as an alternative to "circumflex accent" was considered, but not retained.

5) Notes relative to the 7-bit code table

The delegations present made a review of the notes relative to the 7-bit code table and agreed on several amendments ; more specifically :

- in positions 5/14, 6/0 and 7/14, a note stating that these positions may be used for other graphical symbols when it is necessary to have 8,9 or 10 positions for national use,
- in position 2/3, a note stating that, in countries where there is no requirement for the symbol £, the symbol # may be used,
- in position 7/14, a note allowing for possible graphical variations of "overline".

6) Control characters

The proposal to replace abbreviations of more than three letters by a 3 letters abbreviation, as given in page 10 of document 97/2 N 158, was approved.

Besides, as proposed in paragraph 3.8.2 of document 97/2 N 183, it was decided to replace the symbol "TC_0 (NULL)" by the symbol "NUL".

.../...

For the study of the control character definitions, Subcommittee 2, seconded by a representative of the Secretariat of Subcommittee 6, has prepared document 97/2 N 193, the study of which was proposed. The floor was given to Mr. WARDEN, representative of the SC 6 Secretariat, in order to point out the main amendments in comparison with document 97/2 N 130.

All the delegations present were in favor of the content of document 97/2 N 193 with the adjonction of a preamble stressing the fact that the definitions given in this part are stated in general terms and that more explicit definitions of use may be needed for specific implementation on recording media or on transmission channels ; it was also decided to make some amendments on the following control characters : "CAN" (Cancel), "DC4" (Stop), "ESC" (Escape). For the latter, the CCITT Secretariat representative noted that the standardization of the ending of Escape sequences was to be considered.

It was also requested to add a paragraph stating that the use of the 10 Transmission Control characters on the general telecommunication networks could be the subject of future Recommendations.

One of the main results of this discussion was to discriminate more clearly the respective uses of "ESC" (Escape), "DLE" (Data Link Escape), "SO" (Shift Out) and "SI" (Shift In) characters (see documents 97/2 N 202, 204).

With respect to the proper use of the new character "SUB" (Substitution) and of the character "CAN" (Cancel), the CCITT Secretariat representative noted that their application for transmission should be the subject of further studies and expressed the CCITT interest to such studies.

Subcommittee 2 reserved its position to possibly reexamine the definition of US (Unit Separator) which is not of specific interest to CCITT. Finally, the delegations present approved that the section relative to the functional characteristics related to control characters be a part of the ISO or CCITT Recommendation becoming then Section 5.

...

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ISO/TC 97/SC 2
CARACTER SETS AND CODING

Secretariat :
FRANCE

ISO/TC 97/SC 2
(Austria-1) 182

April 1966

PROPOSAL FOR A CHANGE OF THE ISO 7 BIT CODE

GENERAL STATEMENTS

1 - It seems that the 6 bit code has been made absolete by the technical development ; it should not be standardized. Instead, the inner columns (2 to 5) of the 7 bit code can be considered as preferred 6 bit subset.

2 - There is a hope that logic can arrive to a standard notation by the characters & for conjunction (AND), ! for disjunction (AND/OR), and ^ for negation (NOT). They should be located, therefore, within the 6 bit subset and they should not be assigned to a national use position.

3 - The currency symbols should be placed on a special national use position. The national characters should follow the 26 letter Latin alphabet ; the national use positions, therefore, should be the three or four following positions.

4 - Square brackets should be included in the 6 bit subset ; they should not be located on national use positions.

PROPOSED CHANGES

1 - Assign definitely

2/3 [2/4] 2/5 ^

.../...

FL/rm

NMAH 310/5

2 - The currency sumbols are the positions before A (a), i.e. 4/0 and 6/0.

3 - National use positions are the four positions after Z (z), i.e. 5/11 through 5/14 and 7/11 through 7/14.

RECOMMENDED ASSIGNMENTS

Position	US and int.	GB	D	etc.
4/0	$	£		
5/11	@		Ä	
5/12	#		Ö	
5/13	¤		Ü	
5/14	%		%	
6/0	¢	$		
7/11	{		ä	
7/12	}		ö	
7/13	|		ü	
7/14	`		ß	

COMMENTS

The standard should not define the semantic of characters (the meaning of &, !, ^ e.g.).

On the other hand, recommendations for syntactic use could be added, e.g.

for escaping ', ", /, _

'begin', "end", go to, etc.

for more brackets /, ', ", <, >, |, $, ¢, %

/6/, <13>, $circle$

for meta purposes <, >, |, {, }, ::

<integer> ::= <digit> | <integer>

.../...

FURTHER RECOMMENDATIONS

Whatever characters may be nationally assigned to the four positions after Z (z) - they should be considered letters, so that there are always 30 letters (or 31 letters, if the currency symbol is included) in the 6 bit subset and 60 (or 62) letters in the 7 bit code.

It would be reasonable to classify column 3 as digits so that there are 16 digits for the hexadecimal system ; and column 2 would then include space, brackets and delimiters, and operators :

<digits> ::= 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | ? | " | < | > | [|]
<space> ::= ƀ
<brackets and delimiters> ::= . | , | : | ; | (|) | '
<operators> ::= = | & | ! | ^ | + | - | * | /

A systematic arrangement were then

	0	1	2	3	4	5	6	7	German national use	
0			ƀ	0	[illegible]	P	c	p		
1			(	1	A	Q	a	q		
2			)	2	B	R	b	r		
3			'	3	C	S	c	s		
4			.	4	D	T	d	t		
5			,	5	E	U	e	u		
6			:	6	F	V	f	v		
7			;	7	G	W	g	w		
8			=	8	H	X	h	x		
9			&	9	I	Y	i	y		
10			!	?	J	Z	j	z		
11			^	"	K	@	k	{	Ä	ä
12			+	<	L	#	l	}	Ö	ö
13			-	>	M	¤	m	|	Ü	ü
14			*	[	N	%	n	`		ß
15			/	]	O	_	o	DEL		

.../...

PROPOSAL

FOR A CHANGE OF THE ISO 7 BIT CODE

1 - It is proposed to exchange the assignments of positions 4/0 and 6/0.

Reasons : The character @ or an other national extender are more important for information processing in the 6 bit subset (Columns 2 to 5) than the accent which can as well be assigned to the column 6. The 6 bit subset seems to replace the originally proposed ISO 6 bit code.

2 - It is proposed to assign the first currency symbol to position 2/4.

Reasons : The first currency symbol should be available under all circumstances.

3 - It is proposed to assign the circumflex strictly to position 5/14 and not to allow national use.

Reasons : The characters &, ! and ^ give a hope for a standard notation in logic for conjunction (AND), disjunction (OR), and negation (NOT) resp., because the same characters can be reserved for the same purpose in the IBM codes.

4 - It is proposed to assign the square brackets strictly to positions 5/11 and 5/13 and not to allow national use.

Reasons : Square brackets are a necessity for programming purposes.

5 - In order to have positions for national characters (like Ä, Ö, and Ü in German), it is proposed to declare positions 4/0, 2/3 and 5/12 for national use.

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ISO/TC 97/SC 2
CHARACTER SETS AND CODING

Secretariat :
FRANCE

ISO/TC 97/SC 2
(Spain-1) 180
April 1966

7 - BIT CODE TABLE

(Item 6 of Agenda 97/2 N 161 : Joint ISO - CCITT meeting)

We suggest to incorporate the following changes in the 7-BIT Code Table :

1. 4/0 position should be left for National use.
2. 2/3 position, or still letter 5/11, should be left as a National Graphic and used for "Number Sign"
3. CS1 should be used as National Currency Symbol in position 2/4, or still better 5/13
4. CS2 should be used as secondary symbol or National Graphic in position 5/12
5. As square brackets are symbols used internationally for programming purposes, they should not be left for Nationl use. Either 5/11 and 5/13 or 2/3 and 2/4 should be defined for international use.

Our preferences in points 2 and 3 are for better sorting purposes. The changes that we suggest will permit the various Countries to have the necessary graphics for National use and will enable to make the transition to ISCII much easier and earlier.

FL/rm

E C M A

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

ECMA/TC1/66/42

I.S.O. - TC97/SC2, CHARACTER SETS AND CODING

PARIS, 25TH-29TH APRIL, 1966

REPORTED BY MESSRS. A. J. RAPHAEL AND W. BOHN (JOINT MEETING)

1. INTRODUCTION

Brief Summary of Highlights of the Meeting

1. Definitions of Controls in 7 bit table revised.
2. Position of following graphics changed:- £, @, `.
   'Special Sequence' replaced by 'Substitute'
   'Overline' added.
3. A few corresponding changes to the 6 bit table
4. Implementation of I.S.O. 7 bit code on punched cards accepted.
5. Implementation of 7 bit code on 7 track magnetic tape - with binary appendix removed, recommended to be processed under accelerated procedure.
6. Implementation of 7 bit code on 9 track magnetic tape - with binary appendix removed, three alternative solutions (DNA, ASA, Compromise) to be voted on.

Organisation of Meeting

As resolved at the plenary meeting of TC97 at Tokyo last October, part of the meeting in Paris was held jointly with CCITT/CM ALP on 26th - 27th and morning of 28th. During these two and a half days a task group on magnetic tape was held in parallel.

Mr. Feissel was chairman of the purely SC2 parts of the meeting. He and Mr. Faugeras were co-chairmen of the joint meeting. Mr. Cluff was chairman of the magnetic tape task group.

ECMA representatives throughout were Messrs. R. W. Bemer, W. Bohn, E. W. Cluff and A. J. Raphael. Mr. Bohn attended the joint meeting and the remaining three attended the task group.

Form of Report

In the following report, the order in which events took place and formalities are suppressed, only final conclusions being reported together with explanations and relevant arguments as deemed necessary. Unless otherwise stated in this report, reference to a document such as ISO/TC97/SC2/172 will be simply "Document 172".

It should be pointed out that at the joint meeting it was resolved to discuss only those points on which CCITT and I.S.O. did not completely agree. As Document 130 had already received a positive vote all comments and proposals subsequent to that vote were no longer to be considered.

NMAH
310/5

2. 7 BIT CODE (DOCUMENT 130)

2.1 Revised Definitions of Controls

SC6, represented by Mr. Warden, requested that a substitute character should be made available for a character known to be in error. This requirement was additional to the block cancel already available with 'CANCEL'.

SC2 considered the following alternative solutions:-

(a) The substitute character to be defined by the position currently taken by CANCEL and a sequence of characters to define block cancel

or (b) Underline (5/15) to have the meaning of "Substitute" character when used without being preceded by a backspace character, and the present "Cancel" character to remain unchanged.

or (c) One of the 31 controls to be used for Substitute, and again leave "Cancel" unchanged.

It was resolved to adopt (c) and choose to replace Special Sequence, which is not currently a useful combination, by Substitute, called SUB. At the moment there is no graphic to represent this.

SC6 also requested certain changes in the definition of the controls, (Document 182). Broadly speaking these changes aimed to keep the definitions as general as possible, leaving their precise interpretation to the requirements of the implementers. As a result of both these requests defintions of the controls were reconsidered in detail in the joint CCITT/SC2 meeting. The resulting revised definitions are listed in Appendix I hereto. The following notes may be of interest.

DC4 - DEVICE CONTROL 4. This is a new definition that has been inserted because the definition STOP was removed, mainly because it was difficult to have a good three letter representation of STOP.

ESC - ESCAPE. The ECMA definition was objected to mainly by the U.S. delegation. Whereas the latter preferred to have almost no definition, Germany asked to limit the application of ESCAPE to the extension of non transmission controls only. U.K. wanted ESCAPE for additional controls and graphics. An ad hoc group with members from France, U.K. U.S. Germany, ECMA and SC6 delegations produced the final wording which was then unanimously adopted.

2.2 Graphical Representation of Controls

In view of the difficulty which had been experienced in various committees trying to agree on suitable graphical representation of controls, the German delegation put forward Document 187. This listed two letter abbreviations for the controls. The intention was to have each pair of letters combined into one typeface. Some merit was recognised in this suggestion but no decision was taken.

2.3 Changes to the table of the 7 Bit Code

(1) The name of position 0/0 (zero/zero) was changed to NUL, deleting TC_0.

(2) From the position 1/4 the word STOP was removed.

(3) The graphic in position 2/3 was changed to £ with a note (4) and an as yet un-numbered note attached. This is one of the solutions on which no unanimous agreement could be reached. The solution itself is not a clear one and is the result of a proposal from the U.S. delegation. This

proposal which had the sole objective of keeping the code table unchanged for the U.S., was presented under the disguise of a compromise, and when it obtained approval in an obscure fashion only the U.S. delegation was happy, the other delegations had obviously not realised what they had been tricked into.

It was first decided to abandon the denominations CS1 and CS2 for the currency input and put meaningful symbols instead. For CS1 the sun symbol was considered. The U.S.S.R., Portugal, Italy and Switzerland wanted their sun symbol as the only currency symbol, the U.S. naturally asked for the $ as the only currency symbol, and the rest of the countries preferred two currency symbols, namely $ and £. It was then agreed to put $ into position 2/4 The proposal to remove the square brackets out of the national use area into 2/3 and 2/4 and have currency symbols in the national use area was made, but a discussion of this proposal was not allowed by the chairman. It was then proposed to put £ into 2/3 as an international symbol. The U.S. objected and made the already mentioned compromise proposal to put £ into 2/3 with a note (4) that allows countries that do not need this symbol to replace it by the # sign. Another (CCITT) proposal was made to put £ into 2/3 and move # as a national use character to 5/12. A third proposal to leave # in 2/3 and put £ into 5/12 as a national use character received no support. The chairman sounded the opinions of the difference delegations and stated a clear preference for the second, or CCITT, proposal. This proposal was put to a vote and obtained 8 for, 2 against with one abstention from the CCITT delegations, and 3 for, 2 against, with 2 abstentions from the I.S.O. delegations. After the chairman had already declared that according to democratic rules the proposal was considered to be accepted, the U.S. delegation asked to have their compromise proposal to be put to a vote also. This vote was taken and obtained 7 for, 0 against, 4 abstentions from CCITT, and 3 for, 2 against and 2 abstentions from I.S.O. Although a member of the U.K. delegation pointed out that the large number of abstentions instead of against-votes was due to a misinterpretation as to what was put to a vote, the chairman ruled that the U.S. compromise solution was now accepted.

(4) A yet un-numbered note will be attached to position 2/4.

(5) Assign the graphic @ to position 4/0 and add a note (3) to that position.

(6) In position 5/12 delete CS2, note (4), but keep note (3). This was the second decision, not unanimously accepted as the U.K. abstained.

(7) In position 5/14 delete the note (7) and add a note (3b) to make this position a national use position of a special type. Additional remarks will be made where the new note (3b) is described.

(8) Assign the graphic ` (grave accent) to position 6/0 and replace note (3) by note (3b).

(9) Assign the graphic ‾ (overline) to position 7/14 remove note (3), add note (3b) and add note (7)

(10) Remove from position 1/10 the control SS and replace it with SUB for substitution. This was the confirmation of a decision taken before the joint meeting. A printed representation of the SUB character was considered necessary, but no decision was made.

2.4 Notes to the 7 Bit Code Table

(1) Note (1) will be kept unchanged and CCITT will have an identical note in their code table also.

(2) Note (2) same text as above but (2)

(3) Note (3) remains unchanged.

(4) A new note (3b) is added which reads:- "These 3 positions are normally provided for the diacritical signs: accent grave, circumflex and overline. However, these positions may be used for other graphical symbols when it is necessary to have 8,9 or no positions for national use." This note and the possibilities it permits were considered necessary to satisfy the needs of countries like the U.S.S.R.

(6) Note (6) is completely removed.

(7) Note (7) was reworded to read: For international use this position is used for the graphical symbol OVERLINE, the graphical representation of which may vary according to national use to represent TILDE or another diacritical sign provided that there is no risk of confusion with another graphical symbol included in the table.

(5) Note (4) was reworded to read: In countries where there is no requirement for the sumbol £ the symbol # may be used in position 2/3

(8) Note (8). The end of the last sentence now reads: .... when they precede or follow the BS character.

(9) The yet un-numbered note states that the $ and £ symbols do not mean U.S. dollar or pound sterling but mean currency in general.

The appendix to the code:

(1) It was decided that the appendix in its revised form as detailed hereafter will now be part of the recommendation and that the sentence in parenthesis under the heading will be deleted.

(2) Between the heading and point 1. GENERALIZED CONTROLS the following sentence will be inserted: "Some definitions in this chapter are stated in general terms and more explicit definitions of use may be recommended for a specific use of the code table. Such more explicit definitions may become the subject of other recommendations". It was understood that the fact of the appendix now being part of the recommendation will require some text changes in the introduction.

(3) At the end of point 1. GENERALIZED CONTROLS the following sentence will be added: "The use of the TC characters or the general telecommunication controls may be the subject of future recommendations."

(4) Following a proposal from Germany, and in agreement with the decision made at Tokyo, it was decided to have abbreviations of not more than three letters.

2.5 Other Topics on the Agenda of the Joint Meeting

1. Extension of the sets to non-latin alphabets.

   It was noted that Japan had put in a paper on the subject (Document 163). Upon request the U.S.S.R. delegate explained that the standard alphabet in Russia is the Latin alphabet and that the Cyrillic alphabet is obtained by means of SO and SI. There was no further discussion.

2. Because of lack of time there were practically no discussions on the last two points on the agenda: "Other complementary elements", and "Programs of future work for CCITT and I.S.O. in this field".

3. Since at the end of the meeting, lunch was more than two hours overdue all resolutions were passed in a hurry and for the same reason unanimously.

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION

ISO/TC 97/SC 2
CHARACTER SETS AND CODING

Secretariat :
FRANCE

ISO/TC 97/SC 2
(Paris 66-18) 208 E

AMENDED

April 1966

CONCLUSION OF THE JOINT MEETING

ISO/TC 97/SC 2 - CCITT/GM ALP

PARIS, April 26th - 28th 1966

PRELIMINARY PARAGRAPH

The conclusions which follow have been set up jointly and agreed upon unanimously by the delegations attending the joint meeting of ISO/TC 97/SC 2 and CCITT/GM ALP held at Paris, April 26th, 27th, 28th 1966, acting for :

- either national delegations from Committee Members of ISO belonging to the following countries :

  CANADA, FRANCE, GERMANY, ITALY, NETHERLANDS, UNITED-KINGDOM, UNITED STATES,

- or national delegations from Country Members of CCITT :

  BELGIUM, CANADA, FRANCE, GERMANY, ITALY, JAPAN, NETHERLANDS, PORTUGAL, UNITED-KINGDOM, UNITED STATES, USSR,

- or observers from the following organizations :

  BEMA, ECMA, UIC and ISO/TC 97/SC 6 Secretariat.

1 - The delegations present express the wish that the Recommendation which will be published by ISO on the subject of 7-bit coded character set for information processing interchange results from the incorporation into the Draft Recommendation N 78 distributed by the Secretariat of Committee ISO/TC 97 of the amendments decided upon, either unanimously or by majority, during the joint ISO - CCITT meeting of April 26th, 27th, 28th 1966, as they are registered in the following documents :

- 97/2 N 193 (except : addition to § "Shift-Out" ; amendments to the definitions given in document 97/2 N 202),

FL/MH

...

NMAH 310/5

- 97/2 N 199 (except : addition to point I of a new paragraph 9 ; "change position 1/10 to SUB" ; amendment to the last line of note 8 ; adjunction at an appropriate place of a note indicating that characters £ and $ do not represent national currencies, but are symbols used in the designation of number of national currencies).

- 97/2 N 202 (except : the amendment to definition of "Cancel" ; addition of "(Stop)" at the end of definition of DC 4 ; deletion of the notes relative to NL, and US, the latter being to appear in the brief minutes of the meeting ; the definition of Escape is as in document 97/2 N 204).

- 97/2 N 204 (except : deletion of data on line 8 ; more the 3rd paragraph to become the last paragraph).

The delegations present, taking into account the above modifications, consider it proper to cease to consider as an "appendix being not part of the Recommendation" ; to designate this part "chapter V" ; to delete the note between brackets ; to add the following note under the title of the new paragraph :

"Some definitions in this paragraph are stated in general terms and more explicit definitions may be needed for specific implementation of the code tables. Such more explicit definitions may become the subject of other Recommendations". Paragraph 3 of the introduction would be corrected accordingly.

The delegations present wish that ISO applies for the approval of the so amended draft the most rapid processing possible.

2 - The delegations present believe that the publication by ISO of the Draft Recommendation improved by ISO and CCITT during the meeting will prove efficient only if the different national codes which will be established according to notes ③ and (3b) are themselves a result from a full agreement between the general needs of information processing and the specific needs of national and international transmissions.

They suggest that the Secretariats of Subcommittee ISO/TC 97/ SC 2 on the one part and of CCITT on the other part, consult one another to ensure the establishment of appropriate study groups, on a linguistic basis, and to ensure the outcome of these groups are properly coordinated.

BRIEF MINUTES

OPENING OF THE MEETING

The joint meeting CCITT/GM NEW ALPHABET - ISO/TC 97/SC 2 was opened under the double chairmanship of Mr. D. FAUGERAS (CCITT) and Mr. H. FEISSEL (ISO). On behalf of the AFNOR Direction Generale. Mr. FRONTARD welcomed the CCITT delegates. The list of all participants is given on pages 31 and 32.

Mr. CHESTERMANN (United Kingdom), Mr. HUMBERT (France), Mr. VARGUES (France), and Mr. LITTLE (USA) were appointed to the Editing Committee. The draft Agenda, with the reference ISO/TC 97/SC 2 (Sec.-51) 161 and CCITT/Sp A N 17, was approved.

For item 6 "Study of complementary elements to be added to the draft on 6 and 7-bit coded character sets", document 97/2 N 183 or CCITT/Sp A/GM ALP Temporary document 5 was considered as the basis for discussion.

Mr. FEISSEL also stated that document 97/2 N 193 "Report of the Ad Hoc Committee on DEFINITIONS" was prepared by Subcommittee ISO/TC 97/SC 2 "Character sets and coding" in liaison with a representative of the Secretariat of Subcommittee ISO/TC 97/SC 6 "Digital data transmission".

STUDY OF COMPLEMENTARY AMENDMENTS TO THE DRAFT ON 6 AND 7-BIT CODED CHARACTER SETS

The delegations present first asked not to take into consideration the 6-bit coded character set during the course of the joint ISO - CCITT meeting, because the CCITT does not intend to publish a document on this matter ; it is to be studied during the meeting Subcommittee 2.

Before going through document 97/2 N 183 (CCITT/GM ALP Temp 5), the USA delegation requested that amendments to the code table be as few as possible, several countries being already on the way on of implementing this code.

Sections 1 and 2 of document 97/2 N 183 (GM ALP Temp 5) were agreed upon by the delegations present.

Section 3 "Revision of the code table and notes" was then considered.

.../...

1) Diacritical sign "tilde" (~)

As proposed by document 97/2 N 183, the diacritical sign "tilde" was placed in position 7/14. The delegations further agreed that position 7/14 is reserved for an upper diacritical sign, the graphical representation of which may vary according to national use, provided it will no be the graphical representation of any other diacritical sign explicitely shown in the table.

The "tilde" is to be considered as the preferred character for this position. A new note has to be drafted accordingly. To comply with a request expressed by the USSR delegation, it was decided to add to position 7/14, and to positions 4/0 and 5/14 as well, a note stating that these 3 positions are available for national use when countries need 8 to 10 positions for this purpose.

The CCITT representative stressed that for international interchange, only th option given in the ISO Recommendation table for these 3 positions will be taken into account.

2) Commercial at (@)

It was decided to return this character to position 4/0 of the code table, the "grave accent" symbol being consequently in 6/0.

3) Currency signs

The French delegation recalled the two criteria to be fulfilled by currency signs :

- it is advisable to give to any country the capacity to represent its own currency signs,;
- besides, messages including currency data must be transmitted correctly from one country to another.

Technical Committee ISO/TC 68 "Standardization in the sphere of banking" has circulated a draft proposal on "graphical symbols of currencies for use in international relations". Many of these symbols are made with the crossed L (£) or crossed S ($) and no other special graphic is widely used in that list.

On the other hand, CCITT, during its BRUSSELS meeting (November 1964), proposed to use the Sun (¤) symbol to mean "the following is a currency sign", in lieu of CS1.

.../...

The delegations present were asked to express their preference for one of the two following alternatives :

1 - "Sun" ¤ symbol used for international interchange, CS2 reserved for national use.

2 - CS1 to be $ symbol with no national meaning, CS2 to be £ symbol with no national meaning.

The following delegations were in favor of option 2 :

CANADA
FRANCE
GERMANY
NETHERLANDS
SWEDEN
UNITED KINGDOM

The US delegation approved the use of dollar sign, but had no specific feeling on the choice of £ for CS2.

The Japanese delegation wished CS1 to be international and CS2 to be national.

Were in favor of option 1

ITALY
PORTUGAL
SWITZERLAND
USSR.

On this basis, it was decided to adopt the symbol $ as the first currency sign, in position 2/4.

The delegations present considered then the problem of the second currency sign. Document 97/2 N 183 suggested to exchange positions 2/3 and 5/12 in order to withdraw CS2 from the national options.

A long discussion took place on this matter and several solutions were considered, among which the main ones were :

1 - leave # in position 2/3 and put £ into 5/12 (for national use) ;

2 - place £ in position 2/3 with a note allowing those countries which do not need this symbol to replace it by the # symbol ;

3 - The second currency sign being £ is located in position 2/3, the # symbol is the recommended choice for position 5/12 (for national use).

.../...

Finally, after several votes, the second proposal was taken into account, with the following vote : among CCITT delegations : 7 in favor, 0 against, 4 abstaining ; among ISO delegations : 3 in favor, 2 against, 2 abstaining.

4) Graphic alternatives

The consideration expressed in section 3.4 of document 97/2 N 183 being taken into account, the proposal made to represent "vertical bar" as an alternative to "exclamation mark" and "logical not" as an alternative to "circumflex accent" was considered, but not retained.

5) Notes relative to the 7-bit code table

The delegations present made a review of the notes relative to the 7-bit code table and agreed on several amendments ; more specifically :

- in positions 5/14, 6/0 and 7/14, a note stating that these positions may be used for other graphical symbols when it is necessary to have 8,9 or 10 positions for national use,
- in position 2/3, a note stating that, in countries where there is no requirement for the symbol £, the symbol # may be used,
- in position 7/14, a note allowing for possible graphical variations of "overline".

6) Control characters

The proposal to replace abbreviations of more than three letters by a 3 letters abbreviation, as given in page 10 of document 97/2 N 158, was approved.

Besides, as proposed in paragraph 3.8.2 of document 97/2 N 183, it was decided to replace the symbol "TC_0 (NULL)" by the symbol "NUL".

.../...